



09781708 1238333

#12

## SEQUENCE LISTING

&lt;110&gt; Terman, David S

&lt;120&gt; COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC DISEASE

&lt;130&gt; 751708

&lt;140&gt; US 09/751,708

&lt;141&gt; 2000-12-28

&lt;150&gt; US 60/173,371

&lt;151&gt; 1999-12-28

&lt;160&gt; 166

&lt;170&gt; PatentIn version 3.1

&lt;210&gt; 1

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Staphylococcus sp.

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Gly Ile Cys Ser Thr Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn	
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tta gtt aaa acc ttc aaa ata tat att ttc ttt atg agg gtg acc ctg	255
Leu Val Lys Thr Phe Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu	
45 50 55	
gtt act cac gag aat gtg aaa tct gtt gat caa ctt tta tca cac gat	303
Val Thr His Glu Asn Val Lys Ser Val Asp Gln Leu Leu Ser His Asp	
60 65 70 75	
tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa	351
Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu	
80 85 90	
ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat	399
Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp	
95 100 105	
att tat ggt gta gaa tat tac cat ctc tgt tat tta tgt gaa aat gca	447
Ile Tyr Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala	
110 115 120	
gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat	495
Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn	
125 130 135	
cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt	543
His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly	
140 145 150 155	
atc caa agc cta tca ttt gat att gaa caa ata aaa aat ggt aac tgc	591
Ile Gln Ser Leu Ser Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys	
160 165 170	
tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa	639
Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln	
175 180 185	
cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc	687
Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe	
190 195 200	
ata cct aag aat aaa gaa agt ttt tgg ttt gat ttt ttc cct gaa cca	735
Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro	
205 210 215	
gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg	783
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr	
220 225 230 235	
ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa	831
Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys	
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*(The following information was obtained from the records of the FBI Laboratory.)*

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Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn Leu Val Lys Thr Phe  
35 40 45

Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu Val Thr His Glu Asn  
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Val	Lys	Ser	Val	Asp	Gln	Leu	Leu	Ser	His	Asp	Leu	Ile	Tyr	Asn	Val
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Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu  
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Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly Val Glu  
100 105 110

Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser Ala Cys  
115 120 125

Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn His Leu Glu Ile Pro  
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Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly Ile Gln Ser Leu Ser  
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22

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caggctcgct	tttgcgggcc	ttttttatat	ctgcgcggg	tctggtgctg	attacttcag	180
ccaaaaaggaa	cacctgtat	atg aag tgt	ata tta ttt	aaa tgg gta	ctg tgc	232
		Met Lys Cys	Ile Leu Phe	Lys Trp Val	Leu Cys	
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ctg tta ctg	ggt ttt tct	tcg gta tcc	tat tcc cgg	gag ttt acg	ata	280
Leu Leu Leu	Gly Phe Ser	Ser Ser Val	Ser Tyr Ser	Arg Glu Phe	Thr Ile	
	15		20		25	
gac ttt tcg	acc caa caa	agt tat gtc	tct tcg tta	aat agt ata	cgg	328
Asp Phe Ser	Thr Gln Gln	Ser Tyr Val	Ser Ser Leu	Asn Ser Ile	Arg	
	30		35		40	
aca gag ata	tcg acc cct	ctt gaa cat	ata tct cag	ggg acc aca	tcg	376
Thr Glu Ile	Ser Thr Pro	Leu Glu His	Ile Ser Gln	Gly Thr Thr	Ser	
	45		50		55	
gtg tct gtt	att aac cac	acc cca ccg	ggc agt tat	ttt gct gtg	gat	424
Val Ser Val	Ile Asn His	Thr Pro Pro	Gly Ser Tyr	Phe Ala Val	Asp	
60		65		70	75	
ata cga ggg	ctt gat gtc	tat cag gcg	cgt ttt gac	cat ctt cgt	ctg	472
Ile Arg Gly	Leu Asp Val	Tyr Gln Ala	Arg Phe Asp	His Leu Arg	Leu	
	80		85		90	
att att gag	caa aat aat	tta tat gtg	gcc ggg ttc	gtt aat acg	gca	520
Ile Ile Glu	Gln Asn Asn	Leu Tyr Val	Ala Gly Phe	Val Asn Thr	Ala	
	95		100		105	
aca aat act	ttc tac cgt	ttt tca gat	ttt aca cat	ata tca gtg	ccc	568
Thr Asn Thr	Phe Tyr Arg	Phe Ser Asp	Phe Thr His	Ile Ser Val	Pro	
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ggt gtg aca	acg gtt tcc	atg aca acg	gac agc agt	tat acc act	ctg	616
Gly Val Thr	Thr Val Ser	Met Thr Thr	Asp Ser Ser	Tyr Thr Thr	Leu	
	125		130		135	
caa cgt gtc	gca gcg ctg	gaa cgt tcc	gga atg caa	atc agt cgt	cac	664
Gln Arg Val	Ala Ala Leu	Glu Arg Ser	Gly Met Gln	Ile Ser Arg	His	
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tca ctg gtt	tca tca tat	ctg gcg tta	atg gag ttc	agt ggt aat	aca	712
Ser Leu Val	Ser Ser Tyr	Leu Ala Leu	Met Glu Phe	Ser Ser Gly	Asn Thr	
	160		165		170	
atg acc aga	gat gca tcc	aga gca gtt	ctg cgt ttt	gtc act gtc	aca	760
Met Thr Arg	Asp Ala Ser	Arg Ala Val	Leu Arg Phe	Val Thr Val	Thr	
	175		180		185	
gca gaa gcc	tta cgc ttc	agg cag ata	cag aga gaa	ttt cgt cag	gca	808
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Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Glu Ile Ser Thr  
35 40 45

Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn  
50 55 60

His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp  
65 70 75 80

Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn  
85 90 95

Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr  
100 105 110

Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro Gly Val Thr Thr Val  
115 120 125

Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala Ala  
130 135 140

Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser Ser  
145 150 155 160

Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala  
165 170 175

Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg  
180 185 190

Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala  
195 200 205



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31

29



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Ser	Ser	Ile	Asn	Pro	Phe	Ser	Ala	Ser	Asp	Thr	Glu	Arg	Asn	Ala	Ala	
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ata	ata	gat	cgc	gcc	aat	aag	gag	cag	gag	act	gaa	gcg	gtg	aat	aag	812
Ile	Ile	Asp	Arg	Ala	Asn	Lys	Glu	Gln	Glu	Thr	Glu	Ala	Val	Asn	Lys	
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atg	ata	agc	acc	ggg	gcc	agg	tta	gct	gca	tca	ggc	agg	gca	tct	gat	860
Met	Ile	Ser	Thr	Gly	Ala	Arg	Leu	Ala	Ala	Ser	Gly	Arg	Ala	Ser	Asp	
		115				120					125					
gtt	gct	cac	tca	atg	gtg	ggc	gat	gcg	gtt	aat	caa	gaa	atc	aaa	cag	908
Val	Ala	His	Ser	Met	Val	Gly	Asp	Ala	Val	Asn	Gln	Glu	Ile	Lys	Gln	
130					135					140					145	
tgg	tta	aat	cga	ttc	ggt	acg	gct	caa	gtt	aat	ctg	aat	ttt	gac	aaa	956
Trp	Leu	Asn	Arg	Phe	Gly	Thr	Ala	Gln	Val	Asn	Leu	Asn	Phe	Asp	Lys	
			150					155						160		
aat	ttt	tcg	cta	aaa	gaa	agc	tct	ctt	gat	tgg	ctg	gct	cct	tgg	tat	1004
Asn	Phe	Ser	Leu	Lys	Glu	Ser	Ser	Leu	Asp	Trp	Leu	Ala	Pro	Trp	Tyr	
			165					170					175			
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Asp	Ser	Ala	Ser	Phe	Leu	Phe	Phe	Ser	Gln	Leu	Gly	Ile	Arg	Asn	Lys	
		180					185					190				
gac	agc	cgc	aac	aca	ctt	aac	ctt	ggc	gtc	ggg	ata	cgt	aca	ttg	gag	1100
Asp	Ser	Arg	Asn	Thr	Leu	Asn	Leu	Gly	Val	Gly	Ile	Arg	Thr	Leu	Glu	
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aac	ggt	tgg	ctg	tac	gga	ctt	aat	act	ttt	tat	gat	aat	gat	ttg	acc	1148
Asn	Gly	Trp	Leu	Tyr	Gly	Leu	Asn	Thr	Phe	Tyr	Asp	Asn	Asp	Leu	Thr	
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Gly	His	Asn	His	Arg	Ile	Gly	Leu	Gly	Ala	Glu	Ala	Trp	Thr	Asp	Tyr	
				230				235						240		
tta	cag	ttg	gct	gcc	aat	ggg	tat	ttt	cgc	ctc	aat	gga	tgg	cac	tcg	1244
Leu	Gln	Leu	Ala	Ala	Asn	Gly	Tyr	Phe	Arg	Leu	Asn	Gly	Trp	His	Ser	
			245				250						255			
tcg	cgt	gat	ttc	tcc	gac	tat	aaa	gag	cgc	cca	gcc	act	ggg	ggg	gat	1292
Ser	Arg	Asp	Phe	Ser	Asp	Tyr	Lys	Glu	Arg	Pro	Ala	Thr	Gly	Gly	Asp	
		260					265					270				
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Leu	Arg	Ala	Asn	Ala	Tyr	Leu	Pro	Ala	Leu	Pro	Gln	Leu	Gly	Gly	Lys	
		275				280					28					

gat	aat	ctg	caa	cgc	aac	cct	tat	gcc	gtg	act	gcc	ggg	atc	aat	tac	1436
Asp	Asn	Leu	Gln	Arg	Asn	Pro	Tyr	Ala	Val	Thr	Ala	Gly	Ile	Asn	Tyr	
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acc	ccc	gtg	cct	cta	ctc	act	gtc	ggg	gta	gat	cag	cgt	atg	ggg	aaa	1484
Thr	Pro	Val	Pro	Leu	Leu	Thr	Val	Gly	Val	Asp	Gln	Arg	Met	Gly	Lys	
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agc	agt	aag	cat	gaa	aca	cag	tgg	aac	ctc	caa	atg	aac	tat	cgc	ctg	1532
Ser	Ser	Lys	His	Glu	Thr	Gln	Trp	Asn	Leu	Gln	Met	Asn	Tyr	Arg	Leu	
		340					345					350				
ggc	gag	agt	ttt	cag	tcg	caa	ctt	agc	cct	tca	gcg	gtg	gca	gga	aca	1580
Gly	Glu	Ser	Phe	Gln	Ser	Gln	Leu	Ser	Pro	Ser	Ala	Val	Ala	Gly	Thr	
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cgt	cta	ctg	gcg	gag	agc	cgc	tat	aac	ctt	gtc	gat	cgt	aac	aat	aat	1628
Arg	Leu	Leu	Ala	Glu	Ser	Arg	Tyr	Asn	Leu	Val	Asp	Arg	Asn	Asn	Asn	
370					375					380					385	
atc	gtg	ttg	gag	tat	cag	aaa	cag	cag	gtg	gtt	aaa	ctg	aca	tta	tcg	1676
Ile	Val	Leu	Glu	Tyr	Gln	Lys	Gln	Gln	Val	Val	Lys	Leu	Thr	Leu	Ser	
			390						395					400		
cca	gca	act	atc	tcc	ggc	ctg	ccg	ggt	cag	gtt	tat	cag	gtg	aac	gca	1724
Pro	Ala	Thr	Ile	Ser	Gly	Leu	Pro	Gly	Gln	Val	Tyr	Gln	Val	Asn	Ala	
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caa	gta	caa	ggg	gca	tct	gct	gta	agg	gaa	att	gtc	tgg	agt	gat	gcc	1772
Gln	Val	Gln	Gly	Ala	Ser	Ala	Val	Arg	Glu	Ile	Val	Trp	Ser	Asp	Ala	
		420					425					430				
gaa	ctg	att	gcc	gct	ggc	ggc	aca	tta	aca	cca	ctg	agt	acc	aca	caa	1820
Glu	Leu	Ile	Ala	Ala	Gly	Gly	Thr	Leu	Thr	Pro	Leu	Ser	Thr	Thr	Gln	
	435					440					445					
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Phe	Asn	Leu	Val	Leu	Pro	Pro	Tyr	Lys	Arg	Thr	Ala	Gln	Val	Ser	Arg	
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Val	Thr	Asp	Asp	Leu	Thr	Ala	Asn	Phe	Tyr	Ser	Leu	Ser	Ala	Leu	Ala	
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Val	Asp	His	Gln	Gly	Asn	Arg	Ser	Asn	Ser	Phe	Thr	Leu	Ser	Val	Thr	
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gtt	cag	cag	cct	cag	ttg	aca	tta	acg	gcg	gcc	gtc	att	ggg	gat	ggc	2012
Val	Gln	Gln	Pro	Gln	Leu	Thr	Leu	Thr	Ala	Ala	Val	Ile	Gly	Asp	Gly	
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Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr Thr	
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aat aat ggt gcg cta ccg aat aaa atc acg gaa aag aca gat gca aat	2156
Asn Asn Gly Ala Leu Pro Asn Lys Ile Thr Glu Lys Thr Asp Ala Asn	
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ggc gtc gcg cgc att gca tta acc aat acg aca gat ggc gtg acg gta	2204
Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr Val	
565 570 575	
gtc aca gca gaa gtg gag ggg caa cgg caa agt gtt gat acc cac ttt	2252
Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His Phe	
580 585 590	
gtt aag ggt act atc gcg gcg gat aaa tcc act ctg gct gcg gta ccg	2300
Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val Pro	
595 600 605	
aca tct atc atc gct gat ggt cta atg gct tca acc atc acg ttg gag	2348
Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu Glu	
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Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala Phe	
630 635 640	
gac aca acc tta ggc aat atg ggc gtt atc acg gat cac aat gac ggc	2444
Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp Gly	
645 650 655	
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Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr Val	
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Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr Val	
675 680 685	
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Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe Thr	
690 695 700 705	
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Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr Leu	
710 715 720	
tcc ttt gtc cct gtc gat aag aat ggc cat ttt atc agt ggg atg cag	2684
Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met Gln	
725 730 735	
ggc ttg agt ttt act caa aac ggt gtg ccg gtg agt att agc ccc att	2732
Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro Ile	
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acc gag cag cca gat agc tat acc gcg acg gtg gtt ggg aat agt gtc	2780
Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser Val	
755 760 765	
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Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser Thr	
770 775 780 785	
ttg cag aaa aaa ata tcc cta ttc ccg gta cct acg ctg acc ggt att	2876
Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly Ile	
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Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys Thr	
805 810 815	
atc ttt aaa aac gcc aca ttc cag tta cag atg gat aac gat gtt gct	2972
Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val Ala	
820 825 830	
aat aat act cag tat gag tgg tgg tca ttc aca ccc aat gta tgg	3020
Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val Ser	
835 840 845	
gtt aac gat cag ggt cag gtg acg att acc tac caa acc tat agc gaa	3068
Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser Glu	
850 855 860 865	
gtg gct gtg acg gcg aaa agt aaa aaa ttc cca agt tat tgg gtg agt	3116
Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val Ser	
870 875 880	
tat cgg ttc tac cca aat cgg tgg ata tac gat ggc ggc aga tgg ctg	3164
Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser Leu	
885 890 895	
gta tcc agt ctc gag gcc agc aga caa tgc caa ggt tca gat atg tct	3212
Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met Ser	
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gcg gtt ctt gaa tcc tca cgt gca acc aac gga acg cgt gcg cct gac	3260
Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro Asp	
915 920 925	
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Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser Asp	
930 935 940 945	
tgg caa tct ggt gaa tat tgg gtc aaa aag acc agc acg gat ttt gaa	3356
Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe Glu	
950 955 960	
acc atg aat atg gac aca ggc gca ctg caa cca ggg cct gca tac ttg	3404
Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr Leu	
965 970 975	

gcg ttc ccg ctc tgt gcg ctg tca ata taa ccagataaca gatagcaata 3454  
Ala Phe Pro Leu Cys Ala Leu Ser Ile  
980 985

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Gly Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser  
20 25 30

Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly  
35 40 45

Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr  
50 55 60

Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met  
65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala  
85 90 95

Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn  
100 105 110

Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser  
115 120 125

Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys  
130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp  
145 150 155 160

Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp  
165 170 175

Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn  
180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu  
195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu  
210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp  
225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His  
245 250 255

Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly  
260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly  
275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly  
290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn  
305 310 315 320



*[The following information was obtained from a review of the file maintained by the FBI concerning the activities of the Communist Party, USA, District No. 8.]*

Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly  
325 330 335

Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg  
340 345 350

Leu Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly  
355 360 365

Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn  
370 375 380

Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu  
385 390 395 400

Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn  
405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp  
420 425 430

Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr  
435 440 445

Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser  
450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu  
465 470 475 480

Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val  
485 490 495

Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp  
500 505 510

Gly Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val  
515 520 525

Ala Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr  
530 535 540

Thr Asn Asn Gly Ala Leu Pro Asn Lys Ile Thr Glu Lys Thr Asp Ala  
545 550 555 560

Asn Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr  
565 570 575

Val Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His  
580 585 590

Phe Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val  
595 600 605

Pro Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu  
610 615 620

Glu Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala  
625 630 635 640

Phe Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp  
645 650 655

Gly Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr  
660 665 670

Val Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr  
675 680 685

Val Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe  
690 695 700

Thr Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr  
705 710 715 720

Leu Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met  
725 730 735

Gln Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro  
740 745 750

Ile Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser  
755 760 765

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser  
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly  
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys  
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val  
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val  
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser  
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val  
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser  
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met  
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro  
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser  
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe  
945 950 955 960

Glu Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr  
965 970 975

Leu Ala Phe Pro Leu Cys Ala Leu Ser Ile  
980 985

SECRET

<220>  
<223> Synthetic Sequence

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<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa is a variable amino acid
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<220>
<221>  MISC_FEATURE
<222>  (5)..(5)
<223>  Xaa is a variable amino acid
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<220>
<221>  MISC_FEATURE
<222>  (9)..(9)
<223>  Xaa is a variable amino acid
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<400> 34

Leu Xaa Gly Gly Xaa Gly Asn Asp Xaa  
1 5

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<210> 35
<211> 830
<212> DNA
<213> Neisseria meningitidis
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<220>
<221> CDS
<222> (143)..(667)
<223>
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<400>   35
tcggcaaagc agccggatac cgctacgtat cttgaagtat tgaaaatatt acgatgcaaa      60
aaagaaaatt taagtataat acagcaggat tctttaacgg attcttaaca atttttctaa      120
ctgaccataa aggaacccaaa at  atg aaa aaa gca ctt gcc aca ctg att gcc      172
                               Met Lys Lys Ala Leu Ala Thr Leu Ile Ala
                               1                             5                             10

ctc gct ctc ccg gcc gcc gca ctg gcg gaa ggc gca tcc ggc ttt tac      220
Leu Ala Leu Pro Ala Ala Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr
                              15                          20                          25

gtc caa gcc gat gcc gca cac gca aaa gcc tca agc tct tta ggt tct      268
Val Gln Ala Asp Ala Ala His Ala Lys Ala Ser Ser Ser Leu Gly Ser
                              30                          35                          40
```

gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316  
Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp  
45 50 55

ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364  
Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro  
60 65 70

tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412  
Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp  
75 80 85 90

ttc gac acc caa tgc ccc gtc aaa ccg tat ctc ggc gcg cgc ttg agc 460  
Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser  
95 100 105

ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa 508  
Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln  
110 115 120

acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc 556  
Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr  
125 130 135

ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc ggc aaa 604  
Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys  
140 145 150

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gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg      652
Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val
155                               160                               165          170
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cgc gtc aaa ttc tga tatg'gcctt attctgcaaa ccgc'cgagcc ttcggcggtt 707  
Arg Val Lys Phe

ttgttttctg ccaccgcaac tacacaagcc ggcggttttg tacgataatc ccgaatgctg 767

cggcttctgc cgccctattt tttgaggaat ccgaaatgtc caaaaccatc atccacaccg 827

aca 830

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<210> 36
<211> 174
<212> PRT
<213> Neisseria meningitidis
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<400> 36

Met Lys Lys Ala Leu Ala Thr Leu Ile Ala Leu Ala Leu Pro Ala Ala  
1 5 10 15

Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala  
 20 25 30

His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro  
 35 40 45

Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp  
 50 55 60

Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu  
 65 70 75 80

Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro  
 85 90 95

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val  
 100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly  
 115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp  
 130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn  
 145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe  
 165 170

<210> 37 <211> 352 <212> PRT <213> Homo sapiens <400> 37

Met Glu Gly Ile Ser Ile Tyr Thr Ser Asp Asn Tyr Thr Glu Glu Met  
 1 5 10 15

Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu  
 20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile  
 35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly  
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu  
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val  
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val  
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala  
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser  
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val  
145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn  
165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn  
180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu  
195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser  
210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr  
225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr  
245 250 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln  
260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu  
 275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe  
 290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val  
 305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly  
 325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser  
 340 345 350

<210> 38  
 <211> 645  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (10)..(639)  
 <223>

<400> 38  
 cttgcaggg atg ctg cgc gcg gga gaa gtc cac acc ggg acc acc atc atg 51  
 Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met  
 1 5 10

gca gtg gag ttt gac ggg ggc gtt gtg atg ggt tct gat tcc cga gtg 99  
 Ala Val Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val  
 15 20 25 30

tct gca ggc gag gcg gtg gtg aac cga gtg ttt gac aag ctg tcc ccg 147  
 Ser Ala Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro  
 35 40 45

ctg cac gag cgc atc tac tgt gca ctc tct ggt tca gct gct gat gcc 195  
 Leu His Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala  
 50 55 60

caa gcc gtg gcc gac atg gcc gcc tac cag ctg gag ctc cat ggg ata 243  
 Gln Ala Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile  
 65 70 75

gaa ctg gag gaa cct cca ctt gtt ttg gct gct gca aat gtg gtg aga 291  
 Glu Leu Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg  
 80 85 90



aat atc agc tat aaa tat cga gag gac ttg tct gca cat ctc atg gta 339  
 Asn Ile Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val  
 95 100 105 110  
 gct ggc tgg gac caa cgt gaa gga ggt cag gta tat gga acc ctg gga 387  
 Ala Gly Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly  
 115 120 125  
 gga atg ctg act cga cag cct ttt gcc att ggt ggc tcc ggc agc acc 435  
 Gly Met Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr  
 130 135 140  
 ttt atc tat ggt tat gtg gat gca gca tat aag cca ggc atg tct ccc 483  
 Phe Ile Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro  
 145 150 155  
 gag gag tgc agg cgc ttc acc aca gac gct att gct ctg gcc atg agc 531  
 Glu Glu Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser  
 160 165 170  
 cgg gat ggc tca agc ggg ggt gtc atc tac ctg gtc act att aca gct 579  
 Arg Asp Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala  
 175 180 185 190  
 gcc ggt gtg gac cat cga gtc atc ttg ggc aat gaa ctg cca aaa ttc 627  
 Ala Gly Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe  
 195 200 205  
 tat gat gag tga accttc 645  
 Tyr Asp Glu

<210> 39  
 <211> 209  
 <212> PRT  
 <213> Homo sapiens

<400> 39

Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met Ala Val  
 1 5 10 15  
 Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val Ser Ala  
 20 25 30  
 Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro Leu His  
 35 40 45  
 Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala Gln Ala  
 50 55 60

[illegible]

Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val Ala Gly  
100 105 110

Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr Phe Ile  
130 135 140

Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser Arg Asp  
165 170 175

Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala Ala Gly  
180 185 190

Val	Asp	His	Arg	Val	Ile	Leu	Gly	Asn	Glu	Leu	Pro	Lys	Phe	Tyr	Asp
		195					200					205			

Glu

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<210> 40
<211> 2247
<212> DNA
<213> Homo sapiens .
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<220>
<221> CDS
<222> (1) .. (2247)
<223>
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<400> 40  
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Met Ala Ser Ser Arg Cys Pro Ala Pro Arg Gly Cys Arg Cys Leu Pro  
1 5 10 15

48

gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac	96
Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp	
20 25 30	
tgg gtg ctg ctc cgg acc gcg ctg ccc cgc ata ttc tcc ctg ctg gtg	144
Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val	
35 40 45	
ccc acc gcg ctg cca ctg ctc cgg gtc tgg gcg gtg ggc ctg agc cgc	192
Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg	
50 55 60	
tgg gcc gtg ctc tgg ctg ggg gcc tgc ggg gtc ctc agg gca acg gtt	240
Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val	
65 70 75 80	
ggc tcc aag agc gaa aac gca ggt gcc cag ggc tgg ctg gct gct ttg	288
Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu	
85 90 95	
aag cca tta gct gcg gca ctg ggc ttg gcc ctg ccg gga ctt gcc ttg	336
Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu	
100 105 110	
ttc cga gag ctg atc tca tgg gga gcc ccc ggg tcc gcg gat agc acc	384
Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr	
115 120 125	
agg cta ctg cac tgg gga agt cac cct acc gcc ttc gtt gtc agt tat	432
Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr	
130 135 140	
gca gcg gca ctg ccc gca gca gcc ctg tgg cac aaa ctc ggg agc ctc	480
Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu	
145 150 155 160	
tgg gtg ccc ggc ggt cag ggc ggc tct gga aac cct gtg cgt cgg ctt	528
Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu	
165 170 175	
cta ggc tgc ctg ggc tgc gag acg cgc cgc ctc tgc ctg ttc ctg gtc	576
Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val	
180 185 190	
ctg gtg gtc ctc tcc tct ctt ggg gag atg gcc att cca ttc ttt acg	624
Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr	
195 200 205	
ggc cgc ctc act gac tgg att cta caa gat ggc tca gcc gat acc ttc	672
Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe	
210 215 220	
act cga aac tta act ctc atg tcc att ctc acc ata gcc agt gca gtg	720
Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val	
225 230 235 240	

ctg gag ttc gtg ggt gac ggg atc tat aac aac acc atg ggc cac gtg	768
Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val	
245 250 255	
cac agc cac ttg cag gga gag gtg ttt ggg gct gtc ctg cgc cag gag	816
His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu	
260 265 270	
acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta	864
Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val	
275 280 285	
aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc	912
Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser	
290 295 300	
tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg	960
Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met	
305 310 315 320	
ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct	1008
Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro	
325 330 335	
ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg	1056
Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu	
340 345 350	
gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att	1104
Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile	
355 360 365	
gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag	1152
Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu	
370 375 380	
ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc	1200
Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu	
385 390 395 400	
aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt	1248
Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser	
405 410 415	
att tca ggt atg ctg ctg aaa gtg gga atc ctc tac att ggt ggg cag	1296
Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln	
420 425 430	
ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt	1344
Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val	
435 440 445	
ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc	1392
Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile	
450 455 460	

tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag	1440
Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu	
465 470 475 480	
tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc	1488
Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro	
485 490 495	
tta cac ttg gag ggc ctt gtc cag ttc caa gat gtc tcc ttt gcc tac	1536
Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr	
500 505 510	
cca aac cgc cca gat gtc tta gtg cta cag ggg ctg aca ttc acc cta	1584
Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu	
515 520 525	
cgc cct ggc gag gtg acg gcg ctg gtg gga ccc aat ggg tct ggg aag	1632
Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys	
530 535 540	
agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga	1680
Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly	
545 550 555 560	
cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac	1728
Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr	
565 570 575	
ctg cac agg cag gtg gct gca gtg gga caa gag cca cag gta ttt gga	1776
Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly	
580 585 590	
aga agt ctt caa gaa aat att gcc tat ggc ctg acc cag aag cca act	1824
Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr	
595 600 605	
atg gag gaa atc aca gct gct gca gta aag tct ggg gcc cat agt ttc	1872
Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe	
610 615 620	
atc tct gga ctc cct cag ggc tat gac aca gag gta ggc gag gct ggg	1920
Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly	
625 630 635 640	
agc cag ctg tca ggg ggt cag caa cag gca gtg gcg ttg gcc cga gca	1968
Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala	
645 650 655	
ttg atc cgg aaa ccg tgt gta ctt atc ctg gat gat gcc acc agt gcc	2016
Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala	
660 665 670	
ctg gat gca aac agc cag tta cag gtg gag cag ctc ctg tac gaa agc	2064
Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Tyr Glu Ser	
675 680 685	

cct gag cgg tac tcc cgc tca gtg ctt ctc atc acc cag cac ctc agc 2112  
 Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser  
 690 695 700

ctg gtg gag cag gct gac cac atc ctc ttt ctg gaa gga ggc gct atc 2160  
 Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile  
 705 710 715 720

cgg gag ggg gga acc cac cag cag ctc atg gag aaa aag ggg tgc tac 2208  
 Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr  
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tgg gcc atg gtg cag gct cct gca gat gct cca gaa tga 2247  
 Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu  
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<400> 41

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Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp  
 20 25 30

Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val  
 35 40 45

Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg  
 50 55 60

Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val  
 65 70 75 80

Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu  
 85 90 95

Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu  
 100 105 110

Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr  
 115 120 125

Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr  
130 135 140

Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu  
145 150 155 160

Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu  
165 170 175

Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val  
180 185 190

Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr  
195 200 205

Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe  
210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val  
225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val  
245 250 255

His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu  
260 265 270

Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val  
275 280 285

Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser  
290 295 300

Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met  
305 310 315 320

Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro  
325 330 335

Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu  
340 345 350

Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile  
355 360 365

Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu  
370 375 380

Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu  
385 390 395 400

Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser  
405 410 415

Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln  
420 425 430

Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val  
435 440 445

Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile  
450 455 460

Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu  
465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro  
485 490 495

Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr  
500 505 510

Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu  
515 520 525

Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys  
530 535 540

Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly  
545 550 555 560

Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr  
565 570 575



Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly  
580 585 590

Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr  
595 600 605

Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe  
610 615 620

Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly  
625 630 635 640

Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala  
645 650 655

Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala  
660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser  
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser  
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile  
705 710 715 720

Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr  
725 730 735

Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu  
740 745

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<212> DNA  
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<220>  
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		210					215					220				
gga	gac	acc	cac	ttg	ggt	gga	gaa	gat	ttt	gac	aac	cga	atg	gtc	aac	781
Gly	Asp	Thr	His	Leu	Gly	Gly	Glu	Asp	Phe	Asp	Asn	Arg	Met	Val	Asn	
		225				230					235					
cat	ttt	att	gct	gag	ttt	aag	cgc	aag	cat	aag	aag	gac	atc	agt	gag	829
His	Phe	Ile	Ala	Glu	Phe	Lys	Arg	Lys	His	Lys	Lys	Asp	Ile	Ser	Glu	
240					245					250					255	
aac	aag	aga	gct	gta	aga	cgc	ctc	cgt	act	gct	tgt	gaa	cgt	gct	aag	877
Asn	Lys	Arg	Ala	Val	Arg	Arg	Leu	Arg	Thr	Ala	Cys	Glu	Arg	Ala	Lys	
				260					265					270		
cgt	acc	ctc	tct	tcc	agc	acc	cag	gcc	agt	att	gag	atc	gat	tct	ctc	925
Arg	Thr	Leu	Ser	Ser	Ser	Thr	Gln	Ala	Ser	Ile	Glu	Ile	Asp	Ser	Leu	
			275					280					285			
tat	gaa	gga	atc	gac	ttc	tat	acc	tcc	att	acc	cgt	gcc	cga	ttt	gaa	973
Tyr	Glu	Gly	Ile	Asp	Phe	Tyr	Thr	Ser	Ile	Thr	Arg	Ala	Arg	Phe	Glu	
		290					295					300				
gaa	ctg	aat	gct	gac	ctg	ttc	cgt	ggc	acc	ctg	gac	cca	gta	gag	aaa	1021
Glu	Leu	Asn	Ala	Asp	Leu	Phe	Arg	Gly	Thr	Leu	Asp	Pro	Val	Glu	Lys	
	305					310					315					
gcc	ctt	cga	gat	gcc	aaa	cta	gac	aag	tca	cag	att	cat	gat	att	gtc	1069
Ala	Leu	Arg	Asp	Ala	Lys	Leu	Asp	Lys	Ser	Gln	Ile	His	Asp	Ile	Val	
320					325					330					335	
ctg	gtt	ggt	ggt	tct	act	cgt	atc	ccc	aag	att	cag	aag	ctt	ctc	caa	1117
Leu	Val	Gly	Gly	Ser	Thr	Arg	Ile	Pro	Lys	Ile	Gln	Lys	Leu	Leu	Gln	
				340					345					350		
gac	ttc	ttc	aat	gga	aaa	gaa	ctg	aat	aag	agc	atc	aac	cct	gat	gaa	1165
Asp	Phe	Phe	Asn	Gly	Lys	Glu	Leu	Asn	Lys	Ser	Ile	Asn	Pro	Asp	Glu	
			355					360					365			
gct	gtt	gct	tat	ggt	gca	gct	gtc	cag	gca	gcc	atc	ttg	tct	gga	gac	1213
Ala	Val	Ala	Tyr	Gly	Ala	Ala	Val	Gln	Ala	Ala	Ile	Leu	Ser	Gly	Asp	
		370					375					380				
aag	tct	gag	aat	gtt	caa	gat	ttg	ctg	ctc	ttg	gat	gtc	act	cct	ctt	1261
Lys	Ser	Glu	Asn	Val	Gln	Asp	Leu	Leu	Leu	Leu	Asp	Val	Thr	Pro	Leu	
		385				390					395					
tcc	ctt	ggt	att	gaa	act	gct	ggt	gga	gtc	atg	act	gtc	ctc	atc	aag	1309
Ser	Leu	Gly	Ile	Glu	Thr	Ala	Gly	Gly	Val	Met	Thr	Val	Leu	Ile	Lys	
400					405					410						

tct	gac	aac	cag	cct	ggg	gtg	ctt	att	cag	gtt	tat	gaa	ggc	gag	cgt	1405
Ser	Asp	Asn	Gln	Pro	Gly	Val	Leu	Ile	Gln	Val	Tyr	Glu	Gly	Glu	Arg	
			435					440						445		
gcc	atg	aca	aag	gat	aac	aac	ctg	ctt	ggc	aag	ttt	gaa	ctc	aca	ggc	1453
Ala	Met	Thr	Lys	Asp	Asn	Asn	Leu	Leu	Gly	Lys	Phe	Glu	Leu	Thr	Gly	
			450				455					460				
ata	cct	cct	gca	ccc	cga	ggg	gtt	cct	cag	att	gaa	gtc	act	ttt	gac	1501
Ile	Pro	Pro	Ala	Pro	Arg	Gly	Val	Pro	Gln	Ile	Glu	Val	Thr	Phe	Asp	
			465			470					475					
att	gat	gcc	aat	ggg	ata	ctc	aat	gtc	tct	gct	gtg	gac	aag	agt	acg	1549
Ile	Asp	Ala	Asn	Gly	Ile	Leu	Asn	Val	Ser	Ala	Val	Asp	Lys	Ser	Thr	
480					485				490						495	
gga	aaa	gag	aac	aag	att	act	atc	act	aat	gac	aag	ggc	cgt	ttg	agc	1597
Gly	Lys	Glu	Asn	Lys	Ile	Thr	Ile	Thr	Asn	Asp	Lys	Gly	Arg	Leu	Ser	
				500					505					510		
aag	gaa	gac	att	gaa	cgt	atg	gtc	cag	gaa	gct	gag	aag	tac	aaa	gct	1645
Lys	Glu	Asp	Ile	Glu	Arg	Met	Val	Gln	Glu	Ala	Glu	Lys	Tyr	Lys	Ala	
			515					520					525			
gaa	gat	gag	aag	cag	agg	gac	aag	gtg	tca	tcc	aag	aat	tca	ctt	gag	1693
Glu	Asp	Glu	Lys	Gln	Arg	Asp	Lys	Val	Ser	Ser	Lys	Asn	Ser	Leu	Glu	
			530				535					540				
tcc	tat	gcc	ttc	aac	atg	aaa	gca	act	gtt	gaa	gat	gag	aaa	ctt	caa	1741
Ser	Tyr	Ala	Phe	Asn	Met	Lys	Ala	Thr	Val	Glu	Asp	Glu	Lys	Leu	Gln	
			545			550					555					
ggc	aag	att	aac	gat	gag	gac	aaa	cag	aag	att	ctg	gac	aag	tgt	aat	1789
Gly	Lys	Ile	Asn	Asp	Glu	Asp	Lys	Gln	Lys	Ile	Leu	Asp	Lys	Cys	Asn	
560					565					570					575	
gaa	att	atc	aac	tgg	ctt	gat	aag	aat	cag	act	gct	gag	aag	gaa	gaa	1837
Glu	Ile	Ile	Asn	Trp	Leu	Asp	Lys	Asn	Gln	Thr	Ala	Glu	Lys	Glu	Glu	
				580					585					590		
ttt	gaa	cat	caa	cag	aaa	gag	ctg	gag	aaa	gtt	tgc	aac	ccc	atc	atc	1885
Phe	Glu	His	Gln	Gln	Lys	Glu	Leu	Glu	Lys	Val	Cys	Asn	Pro	Ile	Ile	
			595				600					605				
acc	aag	ctg	tac	cag	agt	gca	gga	ggc	atg	cca	gga	gga	atg	cct	ggg	1933
Thr	Lys	Leu	Tyr	Gln	Ser	Ala	Gly	Gly	Met	Pro	Gly	Gly	Met	Pro	Gly	
			610				615					620				
gga	ttt	cct	ggg	ggg	gga	gct	cct	ccc	tct	ggg	ggg	gct	tcc	tca	ggg	1981
Gly	Phe	Pro	Gly	Gly	Gly	Ala	Pro	Pro	Ser	Gly	Gly	Ala	Ser	Ser	Gly	
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2085

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<400> 43

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Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr Glu  
 35 40 45

Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr  
 50 55 60

Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp  
 65 70 75 80

Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn  
 85 90 95

Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr Lys  
 100 105 110

Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met Lys  
 115 120 125

Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val Val  
 130 135 140

Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp  
 145 150 155 160

Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro  
 165 170 175

Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu  
 180 185 190

Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser  
 195 200 205

Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly  
 210 215 220

Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His  
 225 230 235 240

Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn  
 245 250 255

Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg  
 260 265 270

Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr  
 275 280 285

Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu  
 290 295 300

Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala  
 305 310 315 320

Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu  
 325 330 335

Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp  
 340 345 350

Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala  
 355 360 365

Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys  
 370 375 380

Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu Ser  
 385 390 395 400

Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg  
 405 410 415

Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser  
 420 425 430

Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala  
 435 440 445

Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile  
 450 455 460

Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile  
 465 470 475 480

Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr Gly  
 485 490 495

Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys  
 500 505 510

Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu  
 515 520 525

Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser  
 530 535 540

Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly  
 545 550 555 560

Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn Glu  
 565 570 575

Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu Phe  
 580 585 590

Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr  
 595 600 605

Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly  
 610 615 620

Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly Pro  
625 630 635 640

Thr Ile Glu Glu Val Asp  
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<212> DNA  
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atatgacata gagtataagg aggggttttt atg aac aaa aat gtg ttg aag ttt 174  
Met Asn Lys Asn Val Leu Lys Phe  
1 5  
atg gtc ttt ata atg tta tta aat atc atc aca cct tta ttt aat aaa 222  
Met Val Phe Ile Met Leu Leu Asn Ile Ile Thr Pro Leu Phe Asn Lys  
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aat gaa gca ttt gca gca cga gat att tca tca acg aat gtt aca gat 270  
Asn Glu Ala Phe Ala Ala Arg Asp Ile Ser Ser Thr Asn Val Thr Asp  
25 30 35 40  
tta act gta tca ccg tct aag ata gaa gat ggt ggt aaa acg aca gta 318  
Leu Thr Val Ser Pro Ser Lys Ile Glu Asp Gly Gly Lys Thr Thr Val  
45 50 55  
aaa atg acg ttc gac gat aaa aat gga aaa ata caa aat ggt gac atg 366  
Lys Met Thr Phe Asp Asp Lys Asn Gly Lys Ile Gln Asn Gly Asp Met  
60 65 70  
att aaa gtg gca tgg ccg aca agc ggt aca gta aag ata gag ggt tat 414  
Ile Lys Val Ala Trp Pro Thr Ser Gly Thr Val Lys Ile Glu Gly Tyr  
75 80 85  
agt aaa aca gta cca tta act gtt aaa ggt gaa cag gtg ggt caa gca 462  
Ser Lys Thr Val Pro Leu Thr Val Lys Gly Glu Gln Val Gly Gln Ala  
90 95 100  
gtt att aca cca gac ggt gca aca att aca ttc aat gat aaa gta gaa 510  
Val Ile Thr Pro Asp Gly Ala Thr Ile Thr Phe Asn Asp Lys Val Glu  
105 110 115 120



aaa tta agt gat gtt tcg gga ttt gca gaa ttt gaa gta caa gga aga	558
Lys Leu Ser Asp Val Ser Gly Phe Ala Glu Phe Glu Val Gln Gly Arg	
125 130 135	
aat tta acg caa aca aat act tca gat gac aaa gta gct acg ata aca	606
Asn Leu Thr Gln Thr Asn Thr Ser Asp Asp Lys Val Ala Thr Ile Thr	
140 145 150	
tct ggg aat aaa tca acg aat gtt acg gtt cat aaa agt gaa gcg gga	654
Ser Gly Asn Lys Ser Thr Asn Val Thr Val His Lys Ser Glu Ala Gly	
155 160 165	
aca agt agt gtt ttc tat tat aaa acg gga gat atg cta cca gaa gat	702
Thr Ser Ser Val Phe Tyr Tyr Lys Thr Gly Asp Met Leu Pro Glu Asp	
170 175 180	
acg aca cat gta cga tgg ttt tta aat att aac aat gaa aaa agt tat	750
Thr Thr His Val Arg Trp Phe Leu Asn Ile Asn Asn Glu Lys Ser Tyr	
185 190 195 200	
gta tcg aaa gat att act ata aag gat cag att caa ggt gga cag cag	798
Val Ser Lys Asp Ile Thr Ile Lys Asp Gln Ile Gln Gly Gly Gln Gln	
205 210 215	
tta gat tta agc aca tta aac att aat gtg aca ggt aca cat agc aat	846
Leu Asp Leu Ser Thr Leu Asn Ile Asn Val Thr Gly Thr His Ser Asn	
220 225 230	
tat tat agt gga caa agt gca att act gat ttt gaa aaa gcc ttt cca	894
Tyr Tyr Ser Gly Gln Ser Ala Ile Thr Asp Phe Glu Lys Ala Phe Pro	
235 240 245	
ggt tct aaa ata act gtt gat aat acg aag aac aca att gat gta aca	942
Gly Ser Lys Ile Thr Val Asp Asn Thr Lys Asn Thr Ile Asp Val Thr	
250 255 260	
att cca caa ggc tat ggg tca tat aat agt ttt tca att aac tac aaa	990
Ile Pro Gln Gly Tyr Gly Ser Tyr Asn Ser Phe Ser Ile Asn Tyr Lys	
265 270 275 280	
acc aaa att acg aat gaa cag caa aaa gag ttt gtt aat aat tca caa	1038
Thr Lys Ile Thr Asn Glu Gln Gln Lys Glu Phe Val Asn Asn Ser Gln	
285 290 295	
gct tgg tat caa gag cat ggt aag gaa gaa gtg aac ggg aaa tca ttt	1086
Ala Trp Tyr Gln Glu His Gly Lys Glu Glu Val Asn Gly Lys Ser Phe	
300 305 310	
aat cat act gtg cac aat att aat gct aat gcc ggt att gaa ggt act	1134
Asn His Thr Val His Asn Ile Asn Ala Asn Ala Gly Ile Glu Gly Thr	
315 320 325	
gta aaa ggt gaa tta aaa gtt tta aaa cag gat aaa gat acc aag gct	1182
Val Lys Gly Glu Leu Lys Val Leu Lys Gln Asp Lys Asp Thr Lys Ala	
330 335 340	

cct ata gct aat gta aaa ttt aaa ctt tct aaa aaa gat gga tca gtt	1230
Pro Ile Ala Asn Val Lys Phe Lys Leu Ser Lys Lys Asp Gly Ser Val	
345 350 355 360	
gta aag gac aat caa aaa gaa att gag att ata aca gat gca aac ggt	1278
Val Lys Asp Asn Gln Lys Glu Ile Glu Ile Ile Thr Asp Ala Asn Gly	
365 370 375	
att gct aat att aaa gcg ttg cct agt gga gac tat att tta aaa gaa	1326
Ile Ala Asn Ile Lys Ala Leu Pro Ser Gly Asp Tyr Ile Leu Lys Glu	
380 385 390	
ata gag gcg cca cga ccg tat aca ttt gat aag gat aaa gaa tat ccg	1374
Ile Glu Ala Pro Arg Pro Tyr Thr Phe Asp Lys Asp Lys Glu Tyr Pro	
395 400 405	
ttt act atg aaa gat aca gat aat cag gga tat ttt acg act att gaa	1422
Phe Thr Met Lys Asp Thr Asp Asn Gln Gly Tyr Phe Thr Thr Ile Glu	
410 415 420	
aat gca aaa gcg ata gaa aaa aca aaa gat gtt tct gct caa aag gtt	1470
Asn Ala Lys Ala Ile Glu Lys Thr Lys Asp Val Ser Ala Gln Lys Val	
425 430 435 440	
tgg gaa ggc act caa aaa gtg aaa cca acg att tat ttc aag ttg tac	1518
Trp Glu Gly Thr Gln Lys Val Lys Pro Thr Ile Tyr Phe Lys Leu Tyr	
445 450 455	
aaa caa gat gac aat caa aat aca aca cca gta gac aaa gca gag att	1566
Lys Gln Asp Asp Asn Gln Asn Thr Thr Pro Val Asp Lys Ala Glu Ile	
460 465 470	
aaa aaa tta gaa gat gga acg aca aaa gtg aca tgg tct aat ctt ccg	1614
Lys Lys Leu Glu Asp Gly Thr Thr Lys Val Thr Trp Ser Asn Leu Pro	
475 480 485	
gaa aat gac aaa aat ggc aag gct att aaa tat tta gtt aaa gaa gta	1662
Glu Asn Asp Lys Asn Gly Lys Ala Ile Lys Tyr Leu Val Lys Glu Val	
490 495 500	
aat gct caa ggt gaa gat aca aca cca gaa gga tat act aaa aaa gaa	1710
Asn Ala Gln Gly Glu Asp Thr Thr Pro Glu Gly Tyr Thr Lys Lys Glu	
505 510 515 520	
aat ggt tta gtg gtt act aat act gaa aaa cca atc gaa aca aca tca	1758
Asn Gly Leu Val Val Thr Asn Thr Glu Lys Pro Ile Glu Thr Thr Ser	
525 530 535	
att agt ggt gaa aaa gta tgg gac gac aaa gac aat caa gat ggt aag	1806
Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys	
540 545 550	
aga cca gaa aaa gtc agt gtg aat tta ttg gct aac ggg gag aaa gta	1854
Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val	
555 560 565	

aaa acg tta gac gtg aca tct gaa aca aac tgg aag tac gaa ttt aaa	1902
Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys	
570 575 580	
gac tta ccg aag tat gat gaa gga aag aaa ata gaa tat aca gtg acc	1950
Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr	
585 590 595 600	
gaa gat cac gta aaa gac tac aca aca gac atc aac ggt acg aca ata	1998
Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile	
605 610 615	
acg aac aag tat aca cca gga gag aca tcg gca aca gta aca aaa aat	2046
Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn	
620 625 630	
tgg gat gac aat aat aac caa gac gga aaa cga cca act gaa atc aaa	2094
Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys	
635 640 645	
gtt gag tta tat caa gat gga aaa gca aca gga aaa acg gca ata tta	2142
Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu	
650 655 660	
aat gaa tct aat aac tgg aca cat acg tgg aca gga tta gat gaa aaa	2190
Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys	
665 670 675 680	
gca aaa gga caa caa gta aaa tac aca gtc gag gaa tta aca aag gtc	2238
Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val	
685 690 695	
aaa ggt tat aca aca cat gtg gat aac aat gat atg ggt aac ttg att	2286
Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly Asn Leu Ile	
700 705 710	
gtg acg aat aaa tat acg cca gaa aca aca tca att agt ggt gaa aaa	2334
Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys	
715 720 725	
gta tgg gac gac aaa gac aat caa gat ggt aag aga cca gaa aaa gtc	2382
Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val	
730 735 740	
agt gtg aat tta ttg gct gat gga gag aaa gta aaa acg tta gac gtg	2430
Ser Val Asn Leu Leu Ala Asp Gly Glu Lys Val Lys Thr Leu Asp Val	
745 750 755 760	
aca tct gaa aca aac tgg aag tac gaa ttt aaa gac tta ccg aag tat	2478
Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr	
765 770 775	
gat gaa gga aag aaa ata gaa tat aca gtg acc gaa gat cac gta aaa	2526
Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys	
780 785 790	

gac tac aca aca gac atc aac ggt acg aca ata acg aac aag tat aca Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr 795 800 805	2574
cca gga gag aca tcg gca aca gta aca aaa aat tgg gat gac aat aat Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn 810 815 820	2622
aac caa gac gga aaa cga cca act gaa atc aaa gtt gag tta tat caa Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln 825 830 835 840	2670
gat gga aaa gca aca gga aaa acg gca ata tta aat gaa tct aat aac Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn 845 850 855	2718
tgg aca cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln 860 865 870	2766
gta aaa tac aca gtc gag gaa tta aca aag gtc aaa ggt tat aca aca Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr 875 880 885	2814
cat gtg gat aac aat gat atg ggc aac ttg att gtg acg aat aaa tat His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr 890 895 900	2862
acg cca gaa aca aca tca att agt ggt gaa aaa gta tgg gac gac aaa Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys 905 910 915 920	2910
gac aat caa gat ggt aag aga cca gaa aaa gtc agt gtg aat tta ttg Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu 925 930 935	2958
gct aac gga gag aaa gta aaa acg tta gac gtg aca tct gaa aca aac Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn 940 945 950	3006
tgg aag tac gaa ttt aaa gac tta ccg aag tat gat gaa gga aag aaa Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys 955 960 965	3054
ata gaa tat aca gtg acc gaa gat cac gta aaa gac tac aca aca gac Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp 970 975 980	3102
atc aac ggt acg aca ata acg aac aag tat aca cca gga gag aca tcg Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser 985 990 995 1000	3150
gca aca gta aca aaa aat tgg gat gac aat aat aac caa gac gga Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly 1005 1010 1015	3195

aaa cga cca act gaa atc aaa gtt gag tta tat caa gat gga aaa	3240
Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys	
1020 1025 1030	
gca aca gga aaa acg gca ata tta aat gaa tct aat aac tgg aca	3285
Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr	
1035 1040 1045	
cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa gta	3330
His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val	
1050 1055 1060	
aaa tac aca gtc gat gaa tta aca aaa gtt aat ggc tat aca acg	3375
Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr	
1065 1070 1075	
cat gtg gat aac aat gat atg ggt aac ttg att gtg aca aat aaa	3420
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys	
1080 1085 1090	
tat acg ccg aaa aaa ccg aat aaa cca atc tat cct gaa aaa cca	3465
Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro	
1095 1100 1105	
aaa gac aaa aca cca cca act aaa cct gat cat tct aat aaa gtt	3510
Lys Asp Lys Thr Pro Pro Thr Lys Pro Asp His Ser Asn Lys Val	
1110 1115 1120	
aaa cca act ccc cca gat aag cca tca aaa gtg gat aag gat gat	3555
Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp	
1125 1130 1135	
caa cct aaa gat aat aaa acc aaa cct gaa aat cct cta aaa gaa	3600
Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu	
1140 1145 1150	
tta cca aaa act ggt atg aag att ata act tca tgg att aca tgg	3645
Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp	
1155 1160 1165	
gta ttt ata ggt ata ttg gga ctg tat tta att tta aga aaa aga	3690
Val Phe Ile Gly Ile Leu Gly Leu Tyr Leu Ile Leu Arg Lys Arg	
1170 1175 1180	
ttt aac tca taa accattataa ttatttttat agataaggct attccttagtt	3742
Phe Asn Ser	
ctatgtataa tacatgtata ttaataggtc actttttaatc tgtatgtaag cagactaaga	3802
gtggcctttt aaacaaataa aaaaa	3827

<210> 45  
 <211> 1183  
 <212> PRT  
 <213> Staphylococcus aureus

<400> 45

Met Asn Lys Asn Val Leu Lys Phe Met Val Phe Ile Met Leu Leu Asn  
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Ile Ile Thr Pro Leu Phe Asn Lys Asn Glu Ala Phe Ala Ala Arg Asp  
 20 25 30

Ile Ser Ser Thr Asn Val Thr Asp Leu Thr Val Ser Pro Ser Lys Ile  
 35 40 45

Glu Asp Gly Gly Lys Thr Thr Val Lys Met Thr Phe Asp Asp Lys Asn  
 50 55 60

Gly Lys Ile Gln Asn Gly Asp Met Ile Lys Val Ala Trp Pro Thr Ser  
 65 70 75 80

Gly Thr Val Lys Ile Glu Gly Tyr Ser Lys Thr Val Pro Leu Thr Val  
 85 90 95

Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr  
 100 105 110

Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe  
 115 120 125

Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser  
 130 135 140

Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val  
 145 150 155 160

Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys  
 165 170 175

Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu  
 180 185 190

Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys  
195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile  
210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile  
225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn  
245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr  
260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln  
275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys  
290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn  
305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu  
325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys  
340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile  
355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro  
370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr  
385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn  
405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr  
 420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys  
 435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr  
 450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr  
 465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala  
 485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr  
 500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr  
 515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp  
 530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn  
 545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu  
 565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly  
 580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr  
 595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu  
 610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp  
 625 630 635 640



Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys  
 645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His  
 660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr  
 675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp  
 690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu  
 705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln  
 725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly  
 740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr  
 755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr  
 770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly  
 785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val  
 805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr  
 820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr  
 835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu  
 850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu  
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly  
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser  
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro  
915 920 925

Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr  
930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu  
945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp  
965 970 975

His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn  
980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp  
995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val  
1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu  
1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu  
1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr  
1055 1060 1065

Lys Val Asn Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly  
1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys  
1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys  
1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro  
1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys  
1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile  
1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu  
1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser  
1175 1180

<210> 46  
<211> 9  
<212> PRT  
<213> Homo sapiens

<220>  
<221> MISC\_FEATURE  
<222> (4)..(4)  
<223> Xaa can be any amino acid

<220>  
<221> MISC\_FEATURE  
<222> (6)..(7)  
<223> Xaa can be any amino acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val  
1 5

<210> 47  
<211> 209  
<212> PRT  
<213> Homo sapiens

<400> 47

Met Ser Pro His Pro Thr Ala Leu Leu Gly Leu Val Leu Cys Leu Ala  
1 5 10 15

Gln Thr Ile His Thr Gln Glu Glu Asp Leu Pro Arg Pro Ser Ile Ser  
20 25 30

Ala Glu Pro Gly Thr Val Ile Pro Leu Gly Ser His Val Thr Phe Val  
35 40 45

Cys Arg Gly Pro Val Gly Val Gln Thr Phe Arg Leu Glu Arg Glu Ser  
50 55 60

Arg Ser Thr Tyr Asn Asp Thr Glu Asp Val Ser Gln Ala Ser Pro Ser  
65 70 75 80

Glu Ser Glu Ala Arg Phe Arg Ile Asp Ser Val Ser Glu Gly Asn Ala  
85 90 95

Gly Pro Tyr Arg Cys Ile Tyr Tyr Lys Pro Pro Lys Trp Ser Glu Gln  
100 105 110

Ser Asp Tyr Leu Glu Leu Leu Val Lys Glu Thr Ser Gly Gly Pro Asp  
115 120 125

Ser Pro Asp Thr Glu Pro Gly Ser Ser Ala Gly Pro Thr Gln Arg Pro  
130 135 140

Ser Asp Asn Ser His Asn Glu His Ala Pro Ala Ser Gln Gly Leu Lys  
145 150 155 160

Ala Glu His Leu Tyr Ile Leu Ile Gly Val Ser Val Val Phe Leu Phe  
165 170 175

Cys Leu Leu Leu Leu Val Leu Phe Cys Leu His Arg Gln Asn Gln Ile  
180 185 190

Lys Gln Gly Pro Pro Arg Ser Lys Asp Glu Glu Gln Lys Pro Gln Gln  
195 200 205

Arg

<210> 48  
 <211> 410  
 <212> PRT  
 <213> Homo sapiens

<400> 48

Met Ser Leu Met Val Val Ser Met Ala Cys Val Gly Phe Phe Leu Leu  
 1 5 10 15

Glu Gly Pro Trp Pro His Val Gly Gly Gln Asp Lys Pro Phe Leu Ser  
 20 25 30

Ala Trp Pro Gly Thr Val Val Ser Glu Gly Gln His Val Thr Leu Gln  
 35 40 45

Cys Arg Ser His Leu Gly Phe Asn Glu Phe Ser Leu Ser Lys Glu Asp  
 50 55 60

Gly Met Pro Val Pro Glu Leu Tyr Asn Arg Ile Phe Arg Asn Ser Phe  
 65 70 75 80

Leu Met Gly Pro Val Thr Pro Ala His Ala Gly Thr Tyr Arg Cys Cys  
 85 90 95

Ser Ser His Pro His Ser Pro Thr Gly Trp Ser Ala Pro Ser Asn Pro  
 100 105 110

Val Val Ile Met Val Thr Gly Val His Arg Lys Pro Ser Leu Leu Ala  
 115 120 125

His Pro Gly Pro Leu Val Lys Ser Gly Glu Thr Val Ile Leu Gln Cys  
 130 135 140

Trp Ser Asp Val Arg Phe Glu Arg Phe Leu Leu His Arg Glu Gly Ile  
 145 150 155 160

Thr Glu Asp Pro Leu Arg Leu Val Gly Gln Leu His Asp Ala Gly Ser  
 165 170 175

Gln Val Asn Tyr Ser Met Gly Pro Met Thr Pro Ala Leu Ala Gly Thr  
 180 185 190



<210> 49  
 <211> 237  
 <212> PRT  
 <213> Homo sapiens

<400> 49

Met Thr Ser Glu Ile Thr Tyr Ala Glu Val Arg Phe Lys Asn Glu Phe  
 1 5 10 15

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg  
 20 25 30

Thr Ala Pro His Lys Ser Asn Thr Gly Phe Pro Lys Leu Leu Cys Ala  
 35 40 45

Ser Leu Leu Ile Phe Phe Leu Leu Leu Ala Ile Ser Phe Phe Ile Ala  
 50 55 60

Phe Val Ile Phe Phe Gln Lys Tyr Ser Gln Leu Leu Glu Lys Lys Thr  
 65 70 75 80

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met  
 85 90 95

Pro Val Glu Glu Thr Ala Trp Ser Cys Cys Pro Lys Asn Trp Lys Ser  
 100 105 110

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln  
 115 120 125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile  
 130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu  
 145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp  
 165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His  
 180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe  
195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly  
210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu  
225 230 235

<210> 50  
<211> 447  
<212> PRT  
<213> Homo sapiens

<400> 50

Met Ile Pro Thr Phe Thr Ala Leu Leu Cys Leu Gly Leu Ser Leu Gly  
1 5 10 15

Pro Arg Thr His Met Gln Ala Gly Pro Leu Pro Lys Pro Thr Leu Trp  
20 25 30

Ala Glu Pro Gly Ser Val Ile Ser Trp Gly Asn Ser Val Thr Ile Trp  
35 40 45

Cys Gln Gly Thr Leu Glu Ala Arg Glu Tyr Arg Leu Asp Lys Glu Glu  
50 55 60

Ser Pro Ala Pro Trp Asp Arg Gln Asn Pro Leu Glu Pro Lys Asn Lys  
65 70 75 80

Ala Arg Phe Ser Ile Pro Ser Met Thr Glu Asp Tyr Ala Gly Arg Tyr  
85 90 95

Arg Cys Tyr Tyr Arg Ser Pro Val Gly Trp Ser Gln Pro Ser Asp Pro  
100 105 110

Leu Glu Leu Val Met Thr Gly Ala Tyr Ser Lys Pro Thr Leu Ser Ala  
115 120 125

Leu Pro Ser Pro Leu Val Thr Ser Gly Lys Ser Val Thr Leu Leu Cys  
130 135 140



Gln Ser Arg Ser Pro Met Asp Thr Phe Leu Leu Ile Lys Glu Arg Ala  
 145 150 155 160

Ala His Pro Leu Leu His Leu Arg Ser Glu His Gly Ala Gln Gln His  
 165 170 175

Gln Ala Glu Phe Pro Met Ser Pro Val Thr Ser Val His Gly Gly Thr  
 180 185 190

Tyr Arg Cys Phe Ser Ser His Gly Phe Ser His Tyr Leu Leu Ser His  
 195 200 205

Pro Ser Asp Pro Leu Glu Leu Ile Val Ser Gly Ser Leu Glu Gly Pro  
 210 215 220

Arg Pro Ser Pro Thr Arg Ser Val Ser Thr Ala Ala Gly Pro Glu Asp  
 225 230 235 240

Gln Pro Leu Met Pro Thr Gly Ser Val Pro His Ser Gly Leu Arg Arg  
 245 250 255

His Trp Glu Val Leu Ile Gly Val Leu Val Val Ser Ile Leu Leu Leu  
 260 265 270

Ser Leu Leu Leu Phe Leu Leu Leu Gln His Trp Arg Gln Gly Lys His  
 275 280 285

Arg Thr Leu Ala Gln Arg Gln Ala Asp Phe Gln Arg Pro Pro Gly Ala  
 290 295 300

Ala Glu Pro Glu Pro Lys Asp Gly Gly Leu Gln Arg Arg Ser Ser Pro  
 305 310 315 320

Ala Ala Asp Val Gln Gly Glu Asn Phe Cys Ala Ala Val Lys Asn Thr  
 325 330 335

Gln Pro Glu Asp Gly Val Glu Met Asp Thr Arg Ser Pro His Asp Glu  
 340 345 350

Asp Pro Gln Ala Val Thr Tyr Ala Lys Val Lys His Ser Arg Pro Arg  
 355 360 365

[illegible]

Tyr Asn Phe Arg Phe Glu Ile Ser Glu Val Asn Arg Trp Ser Asp Val  
 115 120 125

Lys Gly Thr Leu Val Thr Val Thr Glu Glu Pro Arg Val Pro Thr Ile  
 130 135 140

Ala Ser Pro Val Glu Leu Leu Glu Gly Thr Glu Val Asp Phe Asn Cys  
 145 150 155 160

Ser Thr Pro Tyr Val Cys Leu Gln Glu Gln Val Arg Leu Gln Trp Gln  
 165 170 175

Gly Gln Asp Pro Ala Arg Ser Val Thr Phe Asn Ser Gln Lys Phe Glu  
 180 185 190

Pro Thr Gly Val Gly His Leu Glu Thr Leu His Met Ala Met Ser Trp  
 195 200 205

Gln Asp His Gly Arg Ile Leu Arg Cys Gln Leu Ser Val Ala Asn His  
 210 215 220

Arg Ala Gln Ser Glu Ile His Leu Gln Val Lys Tyr Ala Pro Lys Gly  
 225 230 235 240

Val Lys Ile Leu Leu Ser Pro Ser Gly Arg Asn Ile Leu Pro Gly Glu  
 245 250 255

Leu Val Thr Leu Thr Cys Gln Val Asn Ser Ser Tyr Pro Ala Val Ser  
 260 265 270

Ser Ile Lys Trp Leu Lys Asp Gly Val Arg Leu Gln Thr Lys Thr Gly  
 275 280 285

Val Leu His Leu Pro Gln Ala Ala Trp Ser Asp Ala Gly Val Tyr Thr  
 290 295 300

Cys Gln Ala Glu Asn Gly Val Gly Ser Leu Val Ser Pro Pro Ile Ser  
 305 310 315 320

Leu His Ile Phe Met Ala Glu Val Gln Val Ser Pro Ala Gly Pro Ile  
 325 330 335







[illegible]

Ser	Asp	Pro	Pro	Ala	Gln	Leu	Arg	Leu	Leu	His	Gly	Asp	Arg	Leu
1010						1015						1020		
Val	Ala	Ser	Thr	Leu	Gln	Gly	Val	Gly	Gly	Pro	Glu	Gly	Ser	Ser
1025						1030					1035			
Pro	Arg	Leu	His	Val	Ala	Val	Ala	Pro	Asn	Thr	Leu	Arg	Leu	Glu
1040						1045					1050			
Ile	His	Gly	Ala	Met	Leu	Glu	Asp	Glu	Gly	Val	Tyr	Ile	Cys	Glu
1055						1060					1065			
Ala	Ser	Asn	Thr	Leu	Gly	Gln	Ala	Ser	Ala	Ser	Ala	Asp	Phe	Asp
1070						1075					1080			
Ala	Gln	Ala	Val	Asn	Val	Gln	Val	Trp	Pro	Gly	Ala	Thr	Val	Arg
1085						1090					1095			
Glu	Gly	Gln	Leu	Val	Asn	Leu	Thr	Cys	Leu	Val	Trp	Thr	Thr	His
1100						1105					1110			
Pro	Ala	Gln	Leu	Thr	Tyr	Thr	Trp	Tyr	Gln	Asp	Gly	Gln	Gln	Arg
1115						1120					1125			
Leu	Asp	Ala	His	Ser	Ile	Pro	Leu	Pro	Asn	Val	Thr	Val	Arg	Asp
1130						1135					1140			
Ala	Thr	Ser	Tyr	Arg	Cys	Gly	Val	Gly	Pro	Pro	Gly	Arg	Ala	Pro
1145						1150					1155			
Arg	Leu	Ser	Arg	Pro	Ile	Thr	Leu	Asp	Val	Leu	Tyr	Ala	Pro	Arg
1160						1165					1170			
Asn	Leu	Arg	Leu	Thr	Tyr	Leu	Leu	Glu	Ser	His	Gly	Gly	Gln	Leu
1175						1180					1185			
Ala	Leu	Val	Leu	Cys	Thr	Val	Asp	Ser	Arg	Pro	Pro	Ala	Gln	Leu
1190						1195					1200			
Ala	Leu	Ser	His	Ala	Gly	Arg	Leu	Leu	Ala	Ser	Ser	Thr	Ala	Ala
1205						1210					1215			

Ser Val Pro Asn Thr Leu Arg Leu Glu Leu Arg Gly Pro Gln Pro  
 1220 1225 1230

Arg Asp Glu Gly Phe Tyr Ser Cys Ser Ala Arg Ser Pro Leu Gly  
 1235 1240 1245

Gln Ala Asn Thr Ser Leu Glu Leu Arg Leu Glu Gly Val Arg Val  
 1250 1255 1260

Ile Leu Ala Pro Glu Ala Ala Val Pro Glu Gly Ala Pro Ile Thr  
 1265 1270 1275

Val Thr Cys Ala Asp Pro Ala Ala His Ala Pro Thr Leu Tyr Thr  
 1280 1285 1290

Trp Tyr His Asn Gly Arg Trp Leu Gln Glu Gly Pro Ala Ala Ser  
 1295 1300 1305

Leu Ser Phe Leu Val Ala Thr Arg Ala His Ala Gly Ala Tyr Ser  
 1310 1315 1320

Cys Gln Ala Gln Asp Ala Gln Gly Thr Arg Ser Ser Arg Pro Ala  
 1325 1330 1335

Ala Leu Gln Val Leu Tyr Ala Pro Gln Asp Ala Val Leu Ser Ser  
 1340 1345 1350

Phe Arg Asp Ser Arg Ala Arg Ser Met Ala Val Ile Gln Cys Thr  
 1355 1360 1365

Val Asp Ser Glu Pro Pro Ala Glu Leu Ala Leu Ser His Asp Gly  
 1370 1375 1380

Lys Val Leu Ala Thr Ser Ser Gly Val His Ser Leu Ala Ser Gly  
 1385 1390 1395

Thr Gly His Val Gln Val Ala Arg Asn Ala Leu Arg Leu Gln Val  
 1400 1405 1410

Gln Asp Val Pro Ala Gly Asp Asp Thr Tyr Val Cys Thr Ala Gln  
 1415 1420 1425



Asn Leu	Leu Gly Ser Ile Ser	Thr Ile Gly Arg Leu	Gln Val Glu
1430	1435	1440	
Gly Ala	Arg Val Val Ala Glu	Pro Gly Leu Asp Val	Pro Glu Gly
1445	1450	1455	
Ala Ala	Leu Asn Leu Ser Cys	Arg Leu Leu Gly Gly	Pro Gly Pro
1460	1465	1470	
Val Gly	Asn Ser Thr Phe Ala	Trp Phe Trp Asn Asp	Arg Arg Leu
1475	1480	1485	
His Ala	Glu Pro Val Pro Thr	Leu Ala Phe Thr His	Val Ala Arg
1490	1495	1500	
Ala Gln	Ala Gly Met Tyr His	Cys Leu Ala Glu Leu	Pro Thr Gly
1505	1510	1515	
Ala Ala	Ala Ser Ala Pro Val	Met Leu Arg Val Leu	Tyr Pro Pro
1520	1525	1530	
Lys Thr	Pro Thr Met Met Val	Phe Val Glu Pro Glu	Gly Gly Leu
1535	1540	1545	
Arg Gly	Ile Leu Asp Cys Arg	Val Asp Ser Glu Pro	Leu Ala Ser
1550	1555	1560	
Leu Thr	Leu His Leu Gly Ser	Arg Leu Val Ala Ser	Ser Gln Pro
1565	1570	1575	
Gln Gly	Ala Pro Ala Glu Pro	His Ile His Val Leu	Ala Ser Pro
1580	1585	1590	
Asn Ala	Leu Arg Val Asp Ile	Glu Ala Leu Arg Pro	Ser Asp Gln
1595	1600	1605	
Gly Glu	Tyr Ile Cys Ser Ala	Ser Asn Val Leu Gly	Ser Ala Ser
1610	1615	1620	
Thr Ser	Thr Tyr Phe Gly Val	Arg Ala Leu His Arg	Leu His Gln
1625	1630	1635	

Phe Gln Gln Leu Leu Trp Val Leu Gly Leu Leu Val Gly Leu Leu  
 1640 1645 1650

Leu Leu Leu Leu Gly Leu Gly Ala Cys Tyr Thr Trp Arg Arg Arg  
 1655 1660 1665

Arg Val Cys Lys Gln Ser Met Gly Glu Asn Ser Val Glu Met Ala  
 1670 1675 1680

Phe Gln Lys Glu Thr Thr Gln Leu Ile Asp Pro Asp Ala Ala Thr  
 1685 1690 1695

Cys Glu Thr Ser Thr Cys Ala Pro Pro Leu Gly  
 1700 1705

<210> 52  
 <211> 847  
 <212> PRT  
 <213> Homo sapiens

<400> 52

Met His Leu Leu Gly Pro Trp Leu Leu Leu Leu Val Leu Glu Tyr Leu  
 1 5 10 15

Ala Phe Ser Asp Ser Ser Lys Trp Val Phe Glu His Pro Glu Thr Leu  
 20 25 30

Tyr Ala Trp Glu Gly Ala Cys Val Trp Ile Pro Cys Thr Tyr Arg Ala  
 35 40 45

Leu Asp Gly Asp Leu Glu Ser Phe Ile Leu Phe His Asn Pro Glu Tyr  
 50 55 60

Asn Lys Asn Thr Ser Lys Phe Asp Gly Thr Arg Leu Tyr Glu Ser Thr  
 65 70 75 80

Lys Asp Gly Lys Val Pro Ser Glu Gln Lys Arg Val Gln Phe Leu Gly  
 85 90 95

Asp Lys Asn Lys Asn Cys Thr Leu Ser Ile His Pro Val His Leu Asn  
 100 105 110

Asp Ser Gly Gln Leu Gly Leu Arg Met Glu Ser Lys Thr Glu Lys Trp  
115 120 125

Met Glu Arg Ile His Leu Asn Val Ser Glu Arg Pro Phe Pro Pro His  
130 135 140

Ile Gln Leu Pro Pro Glu Ile Gln Glu Ser Gln Glu Val Thr Leu Thr  
145 150 155 160

Cys Leu Leu Asn Phe Ser Cys Tyr Gly Tyr Pro Ile Gln Leu Gln Trp  
165 170 175

Leu Leu Glu Gly Val Pro Met Arg Gln Ala Ala Val Thr Ser Thr Ser  
180 185 190

Leu Thr Ile Lys Ser Val Phe Thr Arg Ser Glu Leu Lys Phe Ser Pro  
195 200 205

Gln Trp Ser His His Gly Lys Ile Val Thr Cys Gln Leu Gln Asp Ala  
210 215 220

Asp Gly Lys Phe Leu Ser Asn Asp Thr Val Gln Leu Asn Val Lys His  
225 230 235 240

Thr Pro Lys Leu Glu Ile Lys Val Thr Pro Ser Asp Ala Ile Val Arg  
245 250 255

Glu Gly Asp Ser Val Thr Met Thr Cys Glu Val Ser Ser Ser Asn Pro  
260 265 270

Glu Tyr Thr Thr Val Ser Trp Leu Lys Asp Gly Thr Ser Leu Lys Lys  
275 280 285

Gln Asn Thr Phe Thr Leu Asn Leu Arg Glu Val Thr Lys Asp Gln Ser  
290 295 300

Gly Lys Tyr Cys Cys Gln Val Ser Asn Asp Val Gly Pro Gly Arg Ser  
305 310 315 320

Glu Glu Val Phe Leu Gln Val Gln Tyr Ala Pro Glu Pro Ser Thr Val  
325 330 335



Ile Ser Pro Glu Asp Ala Gly Ser Tyr Ser Cys Trp Val Asn Asn Ser  
 565 570 575

Ile Gly Gln Thr Ala Ser Lys Ala Trp Thr Leu Glu Val Leu Tyr Ala  
 580 585 590

Pro Arg Arg Leu Arg Val Ser Met Ser Pro Gly Asp Gln Val Met Glu  
 595 600 605

Gly Lys Ser Ala Thr Leu Thr Cys Glu Ser Asp Ala Asn Pro Pro Val  
 610 615 620

Ser His Tyr Thr Trp Phe Asp Trp Asn Asn Gln Ser Leu Pro His His  
 625 630 635 640

Ser Gln Lys Leu Arg Leu Glu Pro Val Lys Val Gln His Ser Gly Ala  
 645 650 655

Tyr Trp Cys Gln Gly Thr Asn Ser Val Gly Lys Gly Arg Ser Pro Leu  
 660 665 670

Ser Thr Leu Thr Val Tyr Tyr Ser Pro Glu Thr Ile Gly Arg Arg Val  
 675 680 685

Ala Val Gly Leu Gly Ser Cys Leu Ala Ile Leu Ile Leu Ala Ile Cys  
 690 695 700

Gly Leu Lys Leu Gln Arg Arg Trp Lys Arg Thr Gln Ser Gln Gln Gly  
 705 710 715 720

Leu Gln Glu Asn Ser Ser Gly Gln Ser Phe Phe Val Arg Asn Lys Lys  
 725 730 735

Val Arg Arg Ala Pro Leu Ser Glu Gly Pro His Ser Leu Gly Cys Tyr  
 740 745 750

Asn Pro Met Met Glu Asp Gly Ile Ser Tyr Thr Thr Leu Arg Phe Pro  
 755 760 765

Glu Met Asn Ile Pro Arg Thr Gly Asp Ala Glu Ser Ser Glu Met Gln  
 770 775 780

Arg Pro Pro Arg Thr Cys Asp Asp Thr Val Thr Tyr Ser Ala Leu His  
 785 790 795 800

Lys Arg Gln Val Gly Asp Tyr Glu Asn Val Ile Pro Asp Phe Pro Glu  
 805 810 815

Asp Glu Gly Ile His Tyr Ser Glu Leu Ile Gln Phe Gly Val Gly Glu  
 820 825 830

Arg Pro Gln Ala Gln Glu Asn Val Asp Tyr Val Ile Leu Lys His  
 835 840 845

<210> 53  
 <211> 32  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (2)..(2)  
 <223> Xaa is Ile or Leu

<220>  
 <221> MISC\_FEATURE  
 <222> (3)..(3)  
 <223> Xaa can be any amino acid

<220>  
 <221> MISC\_FEATURE  
 <222> (6)..(6)  
 <223> Xaa can be any amino acid

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(25)  
 <223> Xaa can be any amino acid

<220>  
 <221> MISC\_FEATURE  
 <222> (26)..(26)  
 <223> Xaa is Thr or Asn

<220>  
 <221> MISC\_FEATURE  
 <222> (31)..(31)  
 <223> Xaa is Ile or Val

<220>  
 <221> MISC\_FEATURE  
 <222> (32)..(32)  
 <223> Xaa is Lys or Arg



Val Ala Thr Asn Asp Pro Asp Glu Glu Val Gln Glu Glu Thr Arg Gly  
65 70 75 80

Arg Phe His Leu Leu Trp Asp Pro Arg Arg Lys Asn Cys Ser Leu Ser  
85 90 95

Ile Arg Asp Ala Arg Arg Arg Asp Asn Ala Ala Tyr Phe Phe Arg Leu  
100 105 110

Lys Ser Lys Trp Met Lys Tyr Gly Tyr Thr Ser Ser Lys Leu Ser Val  
115 120 125

Arg Val Met Ala Leu Thr His Arg Pro Asn Ile Ser Ile Pro Gly Thr  
130 135 140

Leu Glu Ser Gly His Pro Ser Asn Leu Thr Cys Ser Val Pro Trp Val  
145 150 155 160

Cys Glu Gln Gly Thr Pro Pro Ile Phe Ser Trp Met Ser Ala Ala Pro  
165 170 175

Thr Ser Leu Gly Pro Arg Thr Thr Gln Ser Ser Val Leu Thr Ile Thr  
180 185 190

Pro Arg Pro Gln Asp His Ser Thr Asn Leu Thr Cys Gln Val Thr Phe  
195 200 205

Pro Gly Ala Gly Val Thr Met Glu Arg Thr Ile Gln Leu Asn Val Ser  
210 215 220

Tyr Ala Pro Gln Lys Val Ala Ile Ser Ile Phe Gln Gly Asn Ser Ala  
225 230 235 240

Ala Phe Lys Ile Leu Gln Asn Thr Ser Ser Leu Pro Val Leu Glu Gly  
245 250 255

Gln Ala Leu Arg Leu Leu Cys Asp Ala Asp Gly Asn Pro Pro Ala His  
260 265 270

Leu Ser Trp Phe Gln Gly Phe Pro Ala Leu Asn Ala Thr Pro Ile Ser  
275 280 285



Asn Thr Gly Val Leu Glu Leu Pro Gln Val Gly Ser Ala Glu Glu Gly  
290 295 300

Asp Phe Thr Cys Arg Ala Gln His Pro Leu Gly Ser Leu Gln Ile Ser  
305 310 315 320

Leu Ser Leu Phe Val His Trp Lys Pro Glu Gly Arg Ala Gly Gly Val  
325 330 335

Leu Gly Ala Val Trp Gly Ala Ser Ile Thr Thr Leu Val Phe Leu Cys  
340 345 350

Val Cys Phe Ile Phe Arg Val Lys Thr Arg Arg Lys Lys Ala Ala Gln  
355 360 365

Pro Val Gln Asn Thr Asp Asp Val Asn Pro Val Met Val Ser Gly Ser  
370 375 380

Arg Gly His Gln His Gln Phe Gln Thr Gly Ile Val Ser Asp His Pro  
385 390 395 400

Ala Glu Ala Gly Pro Ile Ser Glu Asp Glu Gln Glu Leu His Tyr Ala  
405 410 415

Val Leu His Phe His Lys Val Gln Pro Gln Glu Pro Lys Val Thr Asp  
420 425 430

Thr Glu Tyr Ser Glu Ile Lys Ile His Lys  
435 440

<210> 56  
<211> 626  
<212> PRT  
<213> Homo sapiens

<400> 56

Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala  
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala  
20 25 30

Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp  
 35 40 45

Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro  
 50 55 60

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val  
 65 70 75 80

Val His Glu Ser Phe Gln Gly Arg Ser Arg Leu Leu Gly Asp Leu Gly  
 85 90 95

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly  
 100 105 110

Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr  
 115 120 125

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val  
 130 135 140

Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met  
 145 150 155 160

Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly  
 165 170 175

His Glu Gly Leu Gly Glu Pro Ala Val Leu Gly Arg Leu Arg Glu Asp  
 180 185 190

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg  
 195 200 205

Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ser Phe Pro Asn Thr  
 210 215 220

Thr Leu Gln Phe Glu Gly Tyr Ala Ser Met Asp Val Lys Tyr Pro Pro  
 225 230 235 240

Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His  
 245 250 255

Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr  
 260 265 270

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu  
 275 280 285

Leu Leu Glu Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala  
 290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu  
 305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val  
 325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn  
 340 345 350

Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ser Thr  
 355 360 365

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro  
 370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln  
 385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu  
 405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys  
 420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser  
 435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu  
 450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala  
 465 470 475 480

Gln Ala Pro Pro Arg Val Ile Cys Thr Ala Arg Asn Leu Tyr Gly Ala  
485 490 495

Lys Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala  
500 505 510

Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala  
515 520 525

Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu  
530 535 540

Ser Pro Ser Phe Ser Ala Gly Asp Asn Pro Pro Val Leu Phe Ser Ser  
545 550 555 560

Asp Phe Arg Ile Ser Gly Ala Pro Glu Lys Tyr Glu Ser Glu Arg Arg  
565 570 575

Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu  
580 585 590

Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys  
595 600 605

Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg  
610 615 620

Val Lys  
625

<210> 57  
<211> 551  
<212> PRT  
<213> Homo sapiens

<400> 57

Met Leu Pro Leu Leu Leu Pro Leu Leu Trp Gly Gly Ser Leu Gln  
1 5 10 15

Glu Lys Pro Val Tyr Glu Leu Gln Val Gln Lys Ser Val Thr Val Gln  
20 25 30

Glu Gly Leu Cys Val Leu Val Pro Cys Ser Phe Ser Tyr Pro Trp Arg  
35 40 45

Ser Trp Tyr Ser Ser Pro Pro Leu Tyr Val Tyr Trp Phe Arg Asp Gly  
50 55 60

Glu Ile Pro Tyr Tyr Ala Glu Val Val Ala Thr Asn Asn Pro Asp Arg  
65 70 75 80

Arg Val Lys Pro Glu Thr Gln Gly Arg Phe Arg Leu Leu Gly Asp Val  
85 90 95

Gln Lys Lys Asn Cys Ser Leu Ser Ile Gly Asp Ala Arg Met Glu Asp  
100 105 110

Thr Gly Ser Tyr Phe Phe Arg Val Glu Arg Gly Arg Asp Val Lys Tyr  
115 120 125

Ser Tyr Gln Gln Asn Lys Leu Asn Leu Glu Val Thr Ala Leu Ile Glu  
130 135 140

Lys Pro Asp Ile His Phe Leu Glu Pro Leu Glu Ser Gly Arg Pro Thr  
145 150 155 160

Arg Leu Ser Cys Ser Leu Pro Gly Ser Cys Glu Ala Gly Pro Pro Leu  
165 170 175

Thr Phe Ser Trp Thr Gly Asn Ala Leu Ser Pro Leu Asp Pro Glu Thr  
180 185 190

Thr Arg Ser Ser Glu Leu Thr Leu Thr Pro Arg Pro Glu Asp His Gly  
195 200 205

Thr Asn Leu Thr Cys Gln Met Lys Arg Gln Gly Ala Gln Val Thr Thr  
210 215 220

Glu Arg Thr Val Gln Leu Asn Val Ser Tyr Ala Pro Gln Thr Ile Thr  
225 230 235 240

Ile Phe Arg Asn Gly Ile Ala Leu Glu Ile Leu Gln Asn Thr Ser Tyr  
245 250 255

Leu Pro Val Leu Glu Gly Gln Ala Leu Arg Leu Leu Cys Asp Ala Pro  
 260 265 270

Ser Asn Pro Pro Ala His Leu Ser Trp Phe Gln Gly Ser Pro Ala Leu  
 275 280 285

Asn Ala Thr Pro Ile Ser Asn Thr Gly Ile Leu Glu Leu Arg Arg Val  
 290 295 300

Arg Ser Ala Glu Glu Gly Gly Phe Thr Cys Arg Ala Gln His Pro Leu  
 305 310 315 320

Gly Phe Leu Gln Ile Phe Leu Asn Leu Ser Val Tyr Ser Leu Pro Gln  
 325 330 335

Leu Leu Gly Pro Ser Cys Ser Trp Glu Ala Glu Gly Leu His Cys Arg  
 340 345 350

Cys Ser Phe Arg Ala Arg Pro Ala Pro Ser Leu Cys Trp Arg Leu Glu  
 355 360 365

Glu Lys Pro Leu Glu Gly Asn Ser Ser Gln Gly Ser Phe Lys Val Asn  
 370 375 380

Ser Ser Ser Ala Gly Pro Trp Ala Asn Ser Ser Leu Ile Leu His Gly  
 385 390 395 400

Gly Leu Ser Ser Asp Leu Lys Val Ser Cys Lys Ala Trp Asn Ile Tyr  
 405 410 415

Gly Ser Gln Ser Gly Ser Val Leu Leu Leu Gln Gly Arg Ser Asn Leu  
 420 425 430

Gly Thr Gly Val Val Pro Ala Ala Leu Gly Gly Ala Gly Val Met Ala  
 435 440 445

Leu Leu Cys Ile Cys Leu Cys Leu Ile Phe Phe Leu Ile Val Lys Ala  
 450 455 460

Arg Arg Lys Gln Ala Ala Gly Arg Pro Glu Lys Met Asp Asp Glu Asp  
 465 470 475 480

Pro Ile Met Gly Thr Ile Thr Ser Gly Ser Arg Lys Lys Pro Trp Pro  
485 490 495

Asp Ser Pro Gly Asp Gln Ala Ser Pro Pro Gly Asp Ala Pro Pro Leu  
500 505 510

Glu Glu Gln Lys Glu Leu His Tyr Ala Ser Leu Ser Phe Ser Glu Met  
515 520 525

Lys Ser Arg Glu Pro Lys Asp Gln Glu Ala Pro Ser Thr Thr Glu Tyr  
530 535 540

Ser Glu Ile Lys Thr Ser Lys  
545 550

<210> 58  
<211> 364  
<212> PRT  
<213> Homo sapiens

<400> 58

Met Pro Leu Leu Leu Leu Leu Pro Leu Leu Trp Ala Gly Ala Leu Ala  
1 5 10 15

Met Asp Pro Asn Phe Trp Leu Gln Val Gln Glu Ser Val Thr Val Gln  
20 25 30

Glu Gly Leu Cys Val Leu Val Pro Cys Thr Phe Phe His Pro Ile Pro  
35 40 45

Tyr Tyr Asp Lys Asn Ser Pro Val His Gly Tyr Trp Phe Arg Glu Gly  
50 55 60

Ala Ile Ile Ser Gly Asp Ser Pro Val Ala Thr Asn Lys Leu Asp Gln  
65 70 75 80

Glu Val Gln Glu Glu Thr Gln Gly Arg Phe Arg Leu Leu Gly Asp Pro  
85 90 95

Ser Arg Asn Asn Cys Ser Leu Ser Ile Val Asp Ala Arg Arg Arg Asp  
100 105 110

[illegible]

Asn Gly Ser Tyr Phe Phe Arg Met Glu Arg Gly Ser Thr Lys Tyr Ser  
115 120 125

Tyr Lys Ser Pro Gln Leu Ser Val His Val Thr Asp Leu Thr His Arg  
130 135 140

Pro Lys Ile Leu Ile Pro Gly Thr Leu Glu Pro Gly His Ser Lys Asn  
145 150 155 160

Leu Thr Cys Ser Val Ser Trp Ala Cys Glu Gln Gly Thr Pro Pro Ile  
165 170 175

Phe Ser Trp Leu Ser Ala Ala Pro Thr Ser Leu Gly Pro Arg Thr Thr  
180 185 190

His Ser Ser Val Leu Ile Ile Thr Pro Arg Pro Gln Asp His Gly Thr  
195 200 205

Asn Leu Thr Cys Gln Val Lys Phe Ala Gly Ala Gly Val Thr Thr Glu  
210 215 220

Arg	Thr	Ile	Gln	Leu	Asn	Val	Thr	Tyr	Val	Pro	Gln	Asn	Pro	Thr	Thr
225					230					235					240

Gly Ile Phe Pro Gly Asp Gly Ser Gly Lys Gln Glu Thr Arg Ala Gly  
245 250 255

Leu Val His Gly Ala Ile Gly Gly Ala Gly Val Thr Ala Leu Leu Ala  
260 265 270

Leu Cys Leu Cys Leu Ile Phe Phe Ile Val Lys Thr His Arg Arg Lys  
 , 275 280 285

Ala Ala Arg Thr Ala Val Gly Ser Asn Asp Thr His Pro Thr Thr Gly  
290 295 300

Ser Ala Ser Pro Lys His Gln Lys Asn Ser Lys Leu His Gly Pro Thr  
305 310 315 320

Glu Thr Ser Ser Cys Ser Gly Ala Ala Pro Thr Val Glu Met Asp Glu  
325 330 335





Gly Cys Phe Gln Asn Leu Thr Cys Ser Val Pro Trp Ala Cys Glu Gln  
 165 170 175

Gly Thr Pro Pro Met Ile Ser Trp Met Gly Thr Ser Val Ser Pro Leu  
 180 185 190

His Pro Ser Thr Thr Arg Ser Ser Val Leu Thr Leu Ile Pro Gln Pro  
 195 200 205

Gln His His Gly Thr Ser Leu Thr Cys Gln Val Thr Leu Pro Gly Ala  
 210 215 220

Gly Val Thr Thr Asn Arg Thr Ile Gln Leu Asn Val Ser Tyr Pro Pro  
 225 230 235 240

Gln Asn Leu Thr Val Thr Val Phe Gln Gly Glu Gly Thr Ala Ser Thr  
 245 250 255

Ala Leu Gly Asn Ser Ser Ser Leu Ser Val Leu Glu Gly Gln Ser Leu  
 260 265 270

Arg Leu Val Cys Ala Val Asp Ser Asn Pro Pro Ala Arg Leu Ser Trp  
 275 280 285

Thr Trp Arg Ser Leu Thr Leu Tyr Pro Ser Gln Pro Ser Asn Pro Leu  
 290 295 300

Val Leu Glu Leu Gln Val His Leu Gly Asp Glu Gly Glu Phe Thr Cys  
 305 310 315 320

Arg Ala Gln Asn Ser Leu Gly Ser Gln His Val Ser Leu Asn Leu Ser  
 325 330 335

Leu Gln Gln Glu Tyr Thr Gly Lys Met Arg Pro Val Ser Gly Val Leu  
 340 345 350

Leu Gly Ala Val Gly Gly Ala Gly Ala Thr Ala Leu Val Phe Leu Ser  
 355 360 365

Phe Cys Val Ile Phe Ile Val Val Arg Ser Cys Arg Lys Lys Ser Ala  
 370 375 380

Arg Pro Ala Ala Asp Val Gly Asp Ile Gly Met Lys Asp Ala Asn Thr  
385 390 395 400

Ile Arg Gly Ser Ala Ser Gln Gly Asn Leu Thr Glu Ser Trp Ala Asp  
405 410 415

Asp Asn Pro Arg His His Gly Leu Ala Ala His Ser Ser Gly Glu Glu  
420 425 430

Arg Glu Ile Gln Tyr Ala Pro Leu Ser Phe His Lys Gly Glu Pro Gln  
435 440 445

Asp Leu Ser Gly Gln Glu Ala Thr Asn Asn Glu Tyr Ser Glu Ile Lys  
450 455 460

Ile Pro Lys  
465

<210> 60  
<211> 524  
<212> PRT  
<213> Homo sapiens

<400> 60

Met Tyr Ala Leu Phe Leu Leu Ala Ser Leu Leu Gly Ala Ala Leu Ala  
1 5 10 15

Gly Pro Val Leu Gly Leu Lys Glu Cys Thr Arg Gly Ser Ala Val Trp  
20 25 30

Cys Gln Asn Val Lys Thr Ala Ser Asp Cys Gly Ala Val Lys His Cys  
35 40 45

Leu Gln Thr Val Trp Asn Lys Pro Thr Val Lys Ser Leu Pro Cys Asp  
50 55 60

Ile Cys Lys Asp Val Val Thr Ala Ala Gly Asp Met Leu Lys Asp Asn  
65 70 75 80

Ala Thr Glu Glu Glu Ile Leu Val Tyr Leu Glu Lys Thr Cys Asp Trp  
85 90 95



Leu Val Lys Glu Val Thr Lys Leu Ile Asp Asn Asn Lys Thr Glu Lys  
 325 330 335

Glu Ile Leu Asp Ala Phe Asp Lys Met Cys Ser Lys Leu Pro Lys Ser  
 340 345 350

Leu Ser Glu Glu Cys Gln Glu Val Val Asp Thr Tyr Gly Ser Ser Ile  
 355 360 365

Leu Ser Ile Leu Leu Glu Glu Val Ser Pro Glu Leu Val Cys Ser Met  
 370 375 380

Leu His Leu Cys Ser Gly Thr Arg Leu Pro Ala Leu Thr Val His Val  
 385 390 395 400

Thr Gln Pro Lys Asp Gly Gly Phe Cys Glu Val Cys Lys Lys Leu Val  
 405 410 415

Gly Tyr Leu Asp Arg Asn Leu Glu Lys Asn Ser Thr Lys Gln Glu Ile  
 420 425 430

Leu Ala Ala Leu Glu Lys Gly Cys Ser Phe Leu Pro Asp Pro Tyr Gln  
 435 440 445

Lys Gln Cys Asp Gln Phe Val Ala Glu Tyr Glu Pro Val Leu Ile Glu  
 450 455 460

Ile Leu Val Glu Val Met Asp Pro Ser Phe Val Cys Leu Lys Ile Gly  
 465 470 475 480

Ala Cys Pro Ser Ala His Lys Pro Leu Leu Gly Thr Glu Lys Cys Ile  
 485 490 495

Trp Gly Pro Ser Tyr Trp Cys Gln Asn Thr Glu Thr Ala Ala Gln Cys  
 500 505 510

Asn Ala Val Glu His Cys Lys Arg His Val Trp Asn  
 515 520

<210> 61  
 <211> 527  
 <212> PRT  
 <213> Homo sapiens

<400> 61

Met Tyr Ala Leu Phe Leu Leu Ala Ser Leu Leu Gly Ala Ala Leu Ala  
 1 5 10 15

Gly Pro Val Leu Gly Leu Lys Glu Cys Thr Arg Gly Ser Ala Val Trp  
 20 25 30

Cys Gln Asn Val Lys Thr Ala Ser Asp Cys Gly Ala Val Lys His Cys  
 35 40 45

Leu Gln Thr Val Trp Asn Lys Pro Thr Val Lys Ser Leu Pro Cys Asp  
 50 55 60

Ile Cys Lys Asp Val Val Thr Ala Ala Gly Asp Met Leu Lys Asp Asn  
 65 70 75 80

Ala Thr Glu Glu Glu Ile Leu Val Tyr Leu Glu Lys Thr Cys Asp Trp  
 85 90 95

Leu Pro Lys Pro Asn Met Ser Ala Ser Cys Lys Glu Ile Val Asp Ser  
 100 105 110

Tyr Leu Pro Val Ile Leu Asp Ile Ile Lys Gly Glu Met Ser Arg Pro  
 115 120 125

Gly Glu Val Cys Ser Ala Leu Asn Leu Cys Glu Ser Leu Gln Lys His  
 130 135 140

Leu Ala Glu Leu Asn His Gln Lys Gln Leu Glu Ser Asn Lys Ile Pro  
 145 150 155 160

Glu Leu Asp Met Thr Glu Val Val Ala Pro Phe Met Ala Asn Ile Pro  
 165 170 175

Leu Leu Leu Tyr Pro Gln Asp Gly Pro Arg Ser Lys Pro Gln Pro Lys  
 180 185 190

107





Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp Leu  
85 90 95

Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys Asp  
100 105 110

Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala Thr  
115 120 125

Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val Gln  
130 135 140

Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp Phe  
145 150 155 160

Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys Leu  
165 170 175

Glu Lys Val Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asp Val  
180 185 190

Ile Tyr Glu Met Tyr Thr Lys Met Asn Ala Glu Leu Asn Tyr Lys Val  
195 200 205

<210> 63  
<211> 209  
<212> PRT  
<213> Homo sapiens

<400> 63

Met Ala Leu Leu Ala Glu His Leu Leu Lys Pro Leu Pro Ala Asp Lys  
1 5 10 15

Gln Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro  
20 25 30

Phe Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp  
35 40 45

Ile Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro  
50 55 60

Ala Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met  
65 70 75 80

Tyr Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp  
85 90 95

Leu Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys  
100 105 110

Asp Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala  
115 120 125

Thr Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val  
130 135 140

Gln Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp  
145 150 155 160

Phe Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys  
165 170 175

Leu Glu Lys Ile Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asp  
180 185 190

Val Ile Tyr Glu Met Tyr Thr Gln Met Asn Ala Glu Leu Asn Tyr Lys  
195 200 205

Val

<210> 64

<211> 276

<212> 'PRT

<213> Homo sapiens

<400> 64

Met Gly Asn Ser Met Lys Ser Thr Pro Ala Pro Ala Glu Arg Pro Leu  
1 5 10 15

Pro Asn Pro Glu Gly Leu Asp Ser Asp Phe Leu Ala Val Leu Ser Asp  
20 25 30

Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys  
 35 40 45

Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu  
 50 55 60

Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val  
 65 70 75 80

Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu  
 85 90 95

Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu  
 100 105 110

Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln  
 115 120 125

Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile  
 130 135 140

Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr  
 145 150 155 160

Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu  
 165 170 175

Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val  
 180 185 190

Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln  
 195 200 205

Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu  
 210 215 220

Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr  
 225 230 235 240

Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu  
 245 250 255



aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt 228  
Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly  
1 5 10 15

att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca 276  
Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr  
20 25 30

cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt 324  
Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe  
35 40 45

tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt 372  
Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly  
50 55 60

ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta 420  
Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu  
65 70 75

ggg gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg 468  
Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala  
80 85 90 95

caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc 516  
Gln Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile  
100 105 110

ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa 564  
Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln  
115 120 125

agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct 612  
Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala  
130 135 140

aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac 660  
Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn  
145 150 155

aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta 708  
Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu  
160 165 170 175

aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca 756  
Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro  
180 185 190

agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct 804  
Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser  
195 200 205

caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct 852  
Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala  
210 215 220

ttc	tat	gaa	atc	tta	cat	tta	cct	aac	tta	aac	gaa	gaa	caa	cgc	aat	900
Phe	Tyr	Glu	Ile	Leu	His	Leu	Pro	Asn	Leu	Asn	Glu	Glu	Gln	Arg	Asn	
225						230					235					
ggt	ttc	atc	caa	agc	cta	aaa	gat	gac	cca	agc	caa	agc	gct	aac	ctt	948
Gly	Phe	Ile	Gln	Ser	Leu	Lys	Asp	Asp	Pro	Ser	Gln	Ser	Ala	Asn	Leu	
240					245					250					255	
tta	gca	gaa	gct	aaa	aag	cta	aat	gat	gct	caa	gca	cca	aaa	gct	gac	996
Leu	Ala	Glu	Ala	Lys	Lys	Leu	Asn	Asp	Ala	Gln	Ala	Pro	Lys	Ala	Asp	
				260					265					270		
aac	aaa	ttc	aac	aaa	gaa	caa	caa	aat	gct	ttc	tat	gaa	att	tta	cat	1044
Asn	Lys	Phe	Asn	Lys	Glu	Gln	Gln	Asn	Ala	Phe	Tyr	Glu	Ile	Leu	His	
			275					280						285		
tta	cct	aac	tta	act	gaa	gaa	caa	cgt	aac	ggc	ttc	atc	caa	agc	ctt	1092
Leu	Pro	Asn	Leu	Thr	Glu	Glu	Gln	Arg	Asn	Gly	Phe	Ile	Gln	Ser	Leu	
		290					295					300				
aaa	gac	gat	cct	tcg	gtg	agc	aaa	gaa	att	tta	gca	gaa	gct	aaa	aag	1140
Lys	Asp	Asp	Pro	Ser	Val	Ser	Lys	Glu	Ile	Leu	Ala	Glu	Ala	Lys	Lys	
	305					310					315					
cta	aac	gat	gct	caa	gca	cca	aaa	gag	gaa	gac	aat	aac	aag	cct	ggc	1188
Leu	Asn	Asp	Ala	Gln	Ala	Pro	Lys	Glu	Glu	Asp	Asn	Asn	Lys	Pro	Gly	
320					325					330					335	
aaa	gaa	gac	aat	aac	aag	cct	ggc	aaa	gaa	gac	aat	aac	aag	cct	ggc	1236
Lys	Glu	Asp	Asn	Asn	Lys	Pro	Gly	Lys	Glu	Asp	Asn	Asn	Lys	Pro	Gly	
				340				345						350		
aaa	gaa	gac	aac	aac	aag	cct	ggc	aaa	gaa	gac	aac	aac	aag	cct	ggc	1284
Lys	Glu	Asp	Asn	Asn	Lys	Pro	Gly	Lys	Glu	Asp	Asn	Asn	Lys	Pro	Gly	
			355				360						365			
aaa	gaa	gac	aac	aac	aag	cct	ggc	aaa	gaa	gac	ggc	aac	aag	cct	ggc	1332
Lys	Glu	Asp	Asn	Asn	Lys	Pro	Gly	Lys	Glu	Asp	Gly	Asn	Lys	Pro	Gly	
		370					375				380					
aaa	gaa	gac	aac	aaa	aaa	cct	ggc	aaa	gaa	gat	ggc	aac	aag	cct	ggc	1380
Lys	Glu	Asp	Asn	Lys	Lys	Pro	Gly	Lys	Glu	Asp	Gly	Asn	Lys	Pro	Gly	
	385					390					395					
aaa	gaa	gac	aac	aaa	aaa	cct	ggc	aaa	gaa	gac	ggc	aac	aag	cct	ggc	1428
Lys	Glu	Asp	Asn	Lys	Lys	Pro	Gly	Lys	Glu	Asp	Gly	Asn	Lys	Pro	Gly	
400					405					410					415	
aaa	gaa	gat	ggc	aac	aaa	cct	ggc	aaa	gaa	gat	ggc	aac	gga	gta	cat	1476
Lys	Glu	Asp	Gly	Asn	Lys	Pro	Gly	Lys	Glu	Asp	Gly	Asn	Gly	Val	His	
				420				425								

act act gct gac aaa att gct gca gat aac aaa ttg gct gat aaa aac 1572  
 Thr Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn  
 450 455 460

atg atc aaa ctt ggt caa gaa ctt gtt gtt gat aag aag caa cca caa 1620  
 Met Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln  
 465 470 475

acc atg cag agc taa caaagctcaa gcattatcag aaactggcga agaaaatcca 1675  
 Thr Met Gln Ser  
 480

ttcatcggtg caactgtatt tgggtggatta tcattagcct taggtgcagc gttattagct 1735

ggacgtcgtc gcgaactata aaaacaaaca atacacaacg atagatatc 1784

<210> 68

<211> 483

<212> PRT

<213> Staphylococcus aureus

<400> 68

Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile  
 1 5 10 15

Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro  
 20 25 30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr  
 35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe  
 50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly  
 65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln  
 85 90 95

Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu  
 100 105 110

Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser  
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys  
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys  
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn  
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser  
 180 185 190

Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln  
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe  
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly  
 225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu  
 245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn  
 260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu  
 275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys  
 290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu  
 305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys  
 325 330 335

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys  
 340 345 350



Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys  
355 360 365

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
370 375 380

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
385 390 395 400

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
405 410 415

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val  
420 425 430

Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr  
435 440 445

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met  
450 455 460

Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln Thr  
465 470 475 480

Met Gln Ser

<210> 69  
<211> 279  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)..(279)  
<223>

<400> 69  
gtg aag ccc aag gcc tgg ctg tcc cgt ggc ccc agt cct ggc cct ggc 48  
Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly  
1 5 10 15  
cgt ctg ctg ctg gtg tgc cat gtc tca gga ttc tac cca aag cct gta 96  
Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val  
20 25 30

tgg gtg aag tgg atg cgg ggt gag cag gag cag cag ggc act cag cca 144  
 Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro  
           35                          40                          45

ggg gac atc ctg ccc aat gct gac gag aca tgg tat ctc cga gca acc 192  
 Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr  
           50                          55                          60

ctg gat gtg gtg gct ggg gag gca gct ggc ctg tcc tgt cgg gtg aag 240  
 Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys  
           65                          70                          75                          80

cac agc agt cta gag ggc cag gac atc gtc ctc tac tgg 279  
 His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp  
                           85                          90

<210> 70  
 <211> 93  
 <212> PRT  
 <213> Homo sapiens

<400> 70

Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly  
 1                          5                          10                          15

Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val  
           20                          25                          30

Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro  
           35                          40                          45

Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr  
           50                          55                          60

Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys  
           65                          70                          75                          80

His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp  
                           85                          90

<210> 71  
 <211> 1873  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> CDS  
 <222> (173)..(175)  
 <223>

<220>  
 <221> CDS  
 <222> (273)..(314)  
 <223>

<220>  
 <221> CDS  
 <222> (315)..(1367)  
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<400> 71  
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 gaacaagccc gtggaacctg gaagccagag aacaccatcg ctgtaaagga aagaaactga 120  
 agctttttctc ggagcctatc tgggctgctc aaactttcag aatctaccga cc atg 175  
 Met  
 1  
 gtgagtcaga cagactgtct tgggggtggaa ctggagccaa cctgaggaat ctcagggtcc 235  
 tggcaggagt ctccctgtcc cctactttc tcctcag gag cgt gtg ctt ggc ttg 290  
 Glu Arg Val Leu Gly Leu  
 5  
 ttg ctg ttg ctt ctg gtg cac gcc tct ccc gcc cca cca gag ccc tgc 338  
 Leu Leu Leu Leu Leu Val His Ala Ser Pro Ala Pro Pro Glu Pro Cys  
 10 15 20  
 gag cta gac gag gaa agt tgc tcc tgc aac ttc tca gat ccg aag cca 386  
 Glu Leu Asp Glu Glu Ser Cys Ser Cys Asn Phe Ser Asp Pro Lys Pro  
 25 30 35  
 gat tgg tcc agc gct ttc aat tgt ttg ggg gcg gca gat gtg gaa ttg 434  
 Asp Trp Ser Ser Ala Phe Asn Cys Leu Gly Ala Ala Asp Val Glu Leu  
 40 45 50 55  
 tac ggc' ggc ggc cgc agc ctg gaa tac ctt cta aag cgt gtg gac acg 482  
 Tyr Gly Gly Gly Arg Ser Leu Glu Tyr Leu Leu Lys Arg Val Asp Thr  
 60 65 70  
 gaa gca gat ctg ggg cag ttc act gat att atc aag tct ctg tcc tta 530  
 Glu Ala Asp Leu Gly Gln Phe Thr Asp Ile Ile Lys Ser Leu Ser Leu  
 75 80 85  
 aag cgg ctt acg gtg cgg gcc gcg cgg att cct agt cgg att cta ttc 578  
 Lys Arg Leu Thr Val Arg Ala Ala Arg Ile Pro Ser Arg Ile Leu Phe  
 90 95 100

gga	gcc	ctg	cgt	gtg	ctc	ggg	att	tcc	ggc	ctc	cag	gaa	ctg	act	ctt	626
Gly	Ala	Leu	Arg	Val	Leu	Gly	Ile	Ser	Gly	Leu	Gln	Glu	Leu	Thr	Leu	
	105					110					115					
gaa	aat	ctc	gag	gta	acc	ggc	acc	gcg	ccg	cca	ccg	ctt	ctg	gaa	gcc	674
Glu	Asn	Leu	Glu	Val	Thr	Gly	Thr	Ala	Pro	Pro	Pro	Leu	Leu	Glu	Ala	
120					125					130					135	
acc	gga	ccc	gat	ctc	aac	atc	ttg	aac	ctc	cgc	aac	gtg	tcg	tgg	gca	722
Thr	Gly	Pro	Asp	Leu	Asn	Ile	Leu	Asn	Leu	Arg	Asn	Val	Ser	Trp	Ala	
				140					145					150		
aca	agg	gat	gcc	tgg	ctc	gca	gaa	ctg	cag	cag	tgg	cta	aag	cct	gga	770
Thr	Arg	Asp	Ala	Trp	Leu	Ala	Glu	Leu	Gln	Gln	Trp	Leu	Lys	Pro	Gly	
			155					160					165			
ctc	aag	gta	ctg	agt	att	gcc	caa	gca	cac	tca	ctc	aac	ttt	tcc	tgc	818
Leu	Lys	Val	Leu	Ser	Ile	Ala	Gln	Ala	His	Ser	Leu	Asn	Phe	Ser	Cys	
		170					175					180				
gaa	cag	gtc	cgc	gtc	ttc	cct	gcc	ctc	tcc	acc	tta	gac	ctg	tct	gac	866
Glu	Gln	Val	Arg	Val	Phe	Pro	Ala	Leu	Ser	Thr	Leu	Asp	Leu	Ser	Asp	
	185					190					195					
aat	cct	gaa	ttg	ggc	gag	aga	gga	ctg	atc	tca	gcc	ctc	tgt	ccc	ctc	914
Asn	Pro	Glu	Leu	Gly	Glu	Arg	Gly	Leu	Ile	Ser	Ala	Leu	Cys	Pro	Leu	
200					205					210					215	
aag	ttc	ccg	acc	ctc	caa	gtt	tta	gcg	ctg	cgt	aac	gcg	ggg	atg	gag	962
Lys	Phe	Pro	Thr	Leu	Gln	Val	Leu	Ala	Leu	Arg	Asn	Ala	Gly	Met	Glu	
				220					225					230		
acg	ccc	agc	ggc	gtg	tgc	tct	gcg	ctg	gcc	gca	gca	agg	gta	cag	ctg	1010
Thr	Pro	Ser	Gly	Val	Cys	Ser	Ala	Leu	Ala	Ala	Ala	Arg	Val	Gln	Leu	
			235					240					245			
caa	gga	cta	gac	ctt	agt	cac	aat	tca	ctg	cgg	gat	gct	gca	ggc	gct	1058
Gln	Gly	Leu	Asp	Leu	Ser	His	Asn	Ser	Leu	Arg	Asp	Ala	Ala	Gly	Ala	
		250					255					260				
ccg	agt	tgt	gac	tgg	ccc	agt	cag	cta	aac	tcg	ctc	aat	ctg	tct	ttc	1106
Pro	Ser	Cys	Asp	Trp	Pro	Ser	Gln	Leu	Asn	Ser	Leu	Asn	Leu	Ser	Phe	
	265					270					275					
act	ggg	ctg	aag	cag	gta	cct	aaa	ggg	ctg	cca	gcc	aag	ctc	agc	gtg	1154
Thr	Gly	Leu	Lys	Gln	Val	Pro	Lys	Gly	Leu	Pro	Ala	Lys	Leu	Ser	Val	
280					285					290					295	
ctg	gat	ctc	agt	tac	aac	agg	ctg	gat	agg	aac	cct	agc	cca	gat	gag	1202
Leu	Asp	Leu	Ser	Tyr	Asn	Arg	Leu	Asp	Arg	Asn	Pro	Ser	Pro	Asp	Glu	
				300												

tct gaa tcc cac tcg gag aag ttt aac tct ggc gta gtc acc gcc gga 1298  
Ser Glu Ser His Ser Glu Lys Phe Asn Ser Gly Val Val Thr Ala Gly  
330 335 340

gct cca tca tcc caa gca gtg gcc ttg tca gga act ctg gct ttg ctc 1346  
Ala Pro Ser Ser Gln Ala Val Ala Leu Ser Gly Thr Leu Ala Leu Leu  
345 350 355

cta gga gat cgc ctc ttt gtt taaggaacat ttgcacctc ctggtttctg 1397  
Leu Gly Asp Arg Leu Phe Val  
360 365

agggtcctcg tcaacgaatc ctctgcttta aatttattaa aatcttaatc cacgatgtaa 1457

ggaaagaaag gcagtcaaga tggttcagtg ggtaaaagcc agcaaacttg acccctgatt 1517

ttaaccctca ggatccacac ggaaggggaa aactcactcc tgaaagttgt ccatctgtgc 1577

tcacaaataa atatttttta aaataacaat gtgtttgttg gttttgtttt tgtttggggtt 1637

ttgttgtggt tttgtttgtt ttgttttgtt tttgagacag tctggctatg tatccttggc 1697

tggcctcaaa ctcataaaga tcaagatcgg cctgcctcta cctccaaatg ctctgggttaa 1757

agggatgtgc ctccatgccc agttgaagtc atcctgaacc acgagtccag gccactcact 1817

ctttactaag atctttacta agtatctgcc ataggtcagg ctcagtgcta aatgag 1873

<210> 72

<211> 366

<212> PRT

<213> Mus musculus

<400> 72

Met Glu Arg Val Leu Gly Leu Leu Leu Leu Leu Val His Ala Ser  
1 5 10 15

Pro Ala Pro Pro Glu Pro Cys Glu Leu Asp Glu Glu Ser Cys Ser Cys  
20 25 30

Asn Phe Ser Asp Pro Lys Pro Asp Trp Ser Ser Ala Phe Asn Cys Leu  
35 40 45

Gly Ala Ala Asp Val Glu Leu Tyr Gly Gly Gly Arg Ser Leu Glu Tyr  
50 55 60

Leu Leu Lys Arg Val Asp Thr Glu Ala Asp Leu Gly Gln Phe Thr Asp  
65 70 75 80



Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu  
 305 310 315 320

Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn  
 325 330 335

Ser Gly Val Val Thr Ala Gly Ala Pro Ser Ser Gln Ala Val Ala Leu  
 340 345 350

Ser Gly Thr Leu Ala Leu Leu Leu Gly Asp Arg Leu Phe Val  
 355 360 365

<210> 73  
 <211> 365  
 <212> PRT  
 <213> Mus musculus

<400> 73

Met Asp Lys Phe Trp Trp His Thr Ala Trp Gly Leu Cys Leu Leu Gln  
 1 5 10 15

Leu Ser Leu Ala His Pro His Gln Gln Ile Asp Leu Asn Val Thr Cys  
 20 25 30

Arg Tyr Ala Gly Val Phe His Val Glu Lys Asn Gly Arg Tyr Ser Ile  
 35 40 45

Ser Arg Thr Glu Ala Ala Asp Leu Cys Gln Ala Phe Asn Ser Thr Leu  
 50 55 60

Pro Thr Met Asp Gln Met Lys Leu Ala Leu Ser Lys Gly Phe Glu Thr  
 65 70 75 80

Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His  
 85 90 95

Pro Asn Ala Ile Cys Ala Ala Asn His Thr Gly Val Tyr Ile Leu Val  
 100 105 110

Thr Ser Asn Thr Ser His Tyr Asp Thr Tyr Cys Phe Asn Ala Ser Ala  
 115 120 125

[illegible]

Pro Pro Glu Glu Asp Cys Thr Ser Val Thr Asp Leu Pro Asn Ser Phe  
130 135 140

Asp	Gly	Pro	Val	Thr	Ile	Thr	Ile	Val	Asn	Arg	Asp	Gly	Thr	Arg	Tyr
145					150					155					160

Ser Lys Lys Gly Glu Tyr Arg Thr His Gln Glu Asp Ile Asp Ala Ser  
165 170 175

Asn Ile Ile Asp Asp Asp Val Ser Ser Gly Ser Thr Ile Glu Lys Ser  
180 185 190

Thr Pro Glu Ser Tyr Ile Leu His Thr Tyr Leu Pro Thr Glu Gln Pro  
195 200 205

Thr Gly Asp Gln Asp Asp Ser Phe Phe Ile Arg Ser Thr Leu Ala Thr  
210 215 220

Arg Asp Arg Asp Ser Ser Lys Asp Ser Arg Gly Ser Ser Arg Thr Val  
225 230 235 240

Thr His Gly Ser Glu Leu Ala Gly His Ser Ser Ala Asn Gln Asp Ser  
245 250 255

Gly Val Thr Thr Thr Ser Gly Pro Met Arg Arg Pro Gln Ile Pro Glu  
260 265 270

Trp Leu Ile Ile Leu Ala Ser Leu Leu Ala Leu Ala Leu Ile Leu Ala  
275 280 285

Val Cys Ile Ala Val Asn Ser Arg Arg Arg Cys Gly Gln Lys Lys Lys  
290 295 300

Leu Val Ile Asn Gly Gly Asn Gly Thr Val Glu Asp Arg Lys Pro Ser  
305 310 315 320

Glu Leu Asn Gly Glu Ala Ser Lys Ser Gln Glu Met Val His Leu Val  
325 330 335

Asn Lys Glu Pro Ser Glu Thr Pro Asp Gln Cys Met Thr Ala Asp Glu  
340 345 350





Pro Val Val His Leu Asn Pro Leu His Ser Leu Gln Val Phe Glu Ile  
180 185 190

Arg Ser Glu Lys Arg Trp Gln Asp Ile Ser Met Met Arg Met Lys Thr  
195 200 205

Ile Gly Glu His Ile Leu Ala His Ile Gln His Glu Val Asp Phe Leu  
210 215 220

Phe Cys Met Asp Val Asp Gln Val Phe Gln Asp Asn Phe Gly Val Glu  
225 230 235 240

Thr Leu Gly Gln Leu Val Ala Gln Leu Gln Ala Trp Trp Tyr Lys Ala  
245 250 255

Ser Pro Glu Lys Phe Thr Tyr Glu Arg Arg Glu Leu Ser Ala Ala Tyr  
260 265 270

Ile Pro Phe Gly Glu Gly Asp Phe Tyr Tyr His Ala Ala Ile Phe Gly  
275 280 285

Gly Thr Pro Thr His Ile Leu Asn Leu Thr Arg Glu Cys Phe Lys Gly  
290 295 300

Ile Leu Gln Asp Lys Lys His Asp Ile Glu Ala Gln Trp His Asp Glu  
305 310 315 320

Ser His Leu Asn Lys Tyr Phe Leu Phe Asn Lys Pro Thr Lys Ile Leu  
325 330 335

Ser Pro Glu Tyr Cys Trp Asp Tyr Gln Ile Gly Leu Pro Ser Asp Ile  
340 345 350

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Asn Asn Val  
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 Ser Leu Thr Gly Glu Gly Thr Gln Pro Gln His Phe Gly Asp Gly  
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 act cga ctc tcc atc cta gag gac ctg aac aa 79  
 Thr Arg Leu Ser Ile Leu Glu Asp Leu Asn  
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 <212> PRT  
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<400> 76  
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Arg Leu Ser Ile Leu Glu Asp Leu Asn  
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<210> 77  
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 <212> DNA  
 <213> Streptococcus pyogenes

<220>  
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 <222> (106)..(1119)  
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 Met Ser Glu Asn  
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ata ccg ctg cga gtc caa ttt aag cgc atg aaa gcc gcc gag tgg gct 165  
 Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala Ala Glu Trp Ala  
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cgt agt gat gtc atc tta ctg gag agc gag ata ggc ttt gag aca gac	213
Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly Phe Glu Thr Asp	
25 30 35	
aca ggt ttt gcc aga gca ggt gat ggg cac aat cga ttt agt gac ctt	261
Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg Phe Ser Asp Leu	
40 45 50	
gga tac att agt cca ctc gat tac aat cta ctg act aac aag cca aat	309
Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr Asn Lys Pro Asn	
55 60 65	
att gat gga tta gcg aca aaa gtc gag acc gct cag aaa cta caa caa	357
Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln Lys Leu Gln Gln	
70 75 80	
aaa gca gat aaa gag acc gtc tat aca aaa gct gaa tcg aag caa gag	405
Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu Ser Lys Gln Glu	
85 90 95 100	
ctt gac aag aaa tta aat ctc aaa ggt ggc gtt atg aca ggt caa cta	453
Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met Thr Gly Gln Leu	
105 110 115	
aaa ttt aag cca gcc gcc act gtt gct tat tcc tcg tca acg ggt gga	501
Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser Ser Thr Gly Gly	
120 125 130	
gcg gtc aat att gac ttg tcg tct acc aga ggt gct ggt gtt gtt gtc	549
Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala Gly Val Val Val	
135 140 145	
tat tct gac aat gat acc agt gat ggg ccg tta atg agc ttg cgg acg	597
Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met Ser Leu Arg Thr	
150 155 160	
ggt aaa gag acc ttt aat caa tcg gcg ctt ttt gtc gac tat aag ggg	645
Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val Asp Tyr Lys Gly	
165 170 175 180	
aca aca aat gcc gtt aat att gcg atg cgt cac gca acc acc ccc aat	693
Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala Thr Thr Pro Asn	
185 190 195	
ttt tca tcg gcg ctt aat att act agc ggc aat gaa aat ggt agt gca	741
Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu Asn Gly Ser Ala	
200 205 210	
atg cag cta cga ggg tca gaa aaa gcg cta gga acg cta aaa att act	789
Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr Leu Lys Ile Thr	
215 220 225	
cat gag aac cca agt att gga gcg gat tat gat aaa aat gcg gca cgt	837
His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys Asn Ala Ala Arg	
230 235 240	

tat cca ttg ata ttg tca aaa aga caa aac ggt gca gga aca gcc gct 885  
 Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala  
 245 250 255 260

cag gga atc tac att aac tca acc tca ggc acg aca ggg aag ttg ctt 933  
 Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr Gly Lys Leu Leu  
 265 270 275

agg att aga aac ctt agt gat gat aag ttc tac gtc aag tct gac ggt 981  
 Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val Lys Ser Asp Gly  
 280 285 290

ggt ttt tat gcc aag gaa act tcg cag att gat ggc aac ctg aaa ctc 1029  
 Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly Asn Leu Lys Leu  
 295 300 305

aag gac ccc aca gcg aat gat cat gcg gca acc aaa gct tat gta gat 1077  
 Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys Ala Tyr Val Asp  
 310 315 320

aaa gca att tct gag tta aaa aaa ctc ata cta aaa aaa tag 1119  
 Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys Lys  
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ttggtaagga tggacgtg 1197

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<211> 337

<212> PRT

<213> Streptococcus pyogenes

<400> 78

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Phe Glu Thr Asp Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg  
 35 40 45

Phe Ser Asp Leu Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr  
 50 55 60

Asn Lys Pro Asn Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln  
 65 70 75 80

Lys Leu Gln Gln Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu  
85 90 95

Ser Lys Gln Glu Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met  
100 105 110

Thr Gly Gln Leu Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser  
115 120 125

Ser Thr Gly Gly Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala  
130 135 140

Gly Val Val Val Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met  
145 150 155 160

Ser Leu Arg Thr Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val  
165 170 175

Asp Tyr Lys Gly Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala  
180 185 190

Thr Thr Pro Asn Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu  
195 200 205

Asn Gly Ser Ala Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr  
210 215 220

Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys  
225 230 235 240

Asn Ala Ala Arg Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala  
245 250 255

Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr  
260 265 270

Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val  
275 280 285

Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly  
290 295 300

Asn Leu Lys Leu Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys  
 305 310 315 320

Ala Tyr Val Asp Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys  
 325 330 335

Lys

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 <212> DNA  
 <213> Bacteriophage T270

<220>  
 <221> CDS  
 <222> (286)..(1374)  
 <223>

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 gaacatcaat tgcttgaaaa tatcgataat tagttaatct aaaacaaaaa gccccacgct 180  
 ctcaaagttt ggcgactctg agcgtgaggc aagacagtat aagaaacaac cattaanaag 240  
 gtcattttct tgtacctatt ttatcaaatt gaaagatggg atgca atg aaa att aaa 297  
 Met Lys Ile Lys  
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 tca tat aaa aag gaa aat ggt gaa act gct tat aaa ttt ctt ttg tat 345  
 Ser Tyr Lys Lys Glu Asn Gly Glu Thr Ala Tyr Lys Phe Leu Leu Tyr  
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 gcc ggt tat gtt aat gga aag aga aaa tat att agg cga gaa ggt ttc 393  
 Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg Arg Glu Gly Phe  
 25 30 35  
 aaa act aag cag gct gca agg gaa acc tta att agt tta caa gct gaa 441  
 Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser Leu Gln Ala Glu  
 40 45 50  
 ctt gat aaa cct aaa tca agt atg aca ttt gga gca ttg aca gat caa 489  
 Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala Leu Thr Asp Gln  
 55 60 65  
 tgg cta aag gaa tat gaa aaa acc gtt cag ggc agt acc tac tta aaa 537  
 Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser Thr Tyr Leu Lys  
 70 75 80

aca gaa aga aat att aat aaa cat att ttg cca aaa ctt gat aaa gtg	585
Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys Leu Asp Lys Val	
85 90 95 100	
aag att gga gac atc aat cca cta ctt atc cag cgg ctt act gaa gaa	633
Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg Leu Thr Glu Glu	
105 110 115	
tgg tgc aac gat tta aaa tat gga gga aaa att ctt ggg ctt gtt agg	681
Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu Gly Leu Val Arg	
120 125 130	
aat atc tta aat cta gct gtt aga tac gga tat atc aat aac aat cca	729
Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile Asn Asn Asn Pro	
135 140 145	
gct ttg cca att aca cct cca aaa ata aaa agg aaa aga aaa atg aat	777
Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys Arg Lys Met Asn	
150 155 160	
aat aat ttt tat aca ctt gat caa ctt aaa caa ttc ctt gaa cta gtt	825
Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe Leu Glu Leu Val	
165 170 175 180	
gaa aaa act gac aac att gaa aaa ata gcc ttg ttt aga tta tta gca	873
Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe Arg Leu Leu Ala	
185 190 195	
ttt act gga ata cga aaa ggg gag ctt ctg gca cta act tgg gat gat	921
Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu Thr Trp Asp Asp	
200 205 210	
ttg aat ggt aat act cta tca att aat aaa gct gtc aca cgt act caa	969
Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val Thr Arg Thr Gln	
215 220 225	
gtt gga cta gaa ata gat gtt acg aag aca aaa tca agc gat aga tta	1017
Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser Ser Asp Arg Leu	
230 235 240	
atc agc tta gat gat gaa act ttg gaa att tta caa gaa ctt cat gaa	1065
Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln Glu Leu His Glu	
245 250 255 260	
act ttt cct act tct act ctt atg ttc caa tct aaa tca ggt gga att	1113
Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys Ser Gly Gly Ile	
265 270 275	
atg acg cca agt tta cca cga aaa tgg cta ttg caa att atc aaa ggg	1161
Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln Ile Ile Lys Gly	
280 285 290	
ata gac tta cca caa atc aca att cat ggt ttc agg cac act cat gca	1209
Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg His Thr His Ala	
295 300 305	



agc tta ctt ttc gaa tca ggt cta tcc ttg aaa cag gtg caa cat aga 1257  
Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln Val Gln His Arg  
310 315 320

tta ggg cat gga gat tta cag aca act atg aac gta tat act cac atc 1305  
Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val Tyr Thr His Ile  
325 330 335 340

acg caa tcg gca att gat gac att gga act aaa ttc aat caa ttt gtt 1353  
Thr Gln Ser Ala Ile Asp Asp Ile Gly Thr Lys Phe Asn Gln Phe Val  
345 350 355

act aac aag caa cta gat tga caactaatc tcaacaaacg ttaatttaac 1404  
Thr Asn Lys Gln Leu Asp  
360

aacattcaag taactccac cagctccatc aatgcttacc gtaagtaatc ataacttact 1464

aaaaccttgt tacatcaagg ttttttcttt ttg 1497

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<211> 362
<212> PRT
<213> Bacteriophage T270
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<400> 80

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20 25 30

Arg Glu Gly Phe Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser  
35 40 45

Leu Gln Ala Glu Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala  
50 55 60

Leu Thr Asp Gln Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser  
65 70 75 80

Thr Tyr Leu Lys Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys  
85 90 95

Leu Asp Lys Val Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg  
100 105 110



Tyr Thr His Ile Thr Gln Ser Ala Ile Asp Asp Ile Gly Thr Lys Phe  
 340 345 350

Asn Gln Phe Val Thr Asn Lys Gln Leu Asp  
 355 360

<210> 81  
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 <212> DNA  
 <213> Staphylococcus aureus

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 aaaatataaa ttctatttaa taattaattt aaatttaggt aatcaatttt gcatctattt 720  
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 Met Val Lys Lys Thr Lys Ser  
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 aat tca cta aaa aaa gtt gca aca ctt gca tta gca aat tta tta tta 820  
 Asn Ser Leu Lys Lys Val Ala Thr Leu Ala Leu Ala Asn Leu Leu Leu  
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 Val Gly Ala Leu Thr Asp Asn Ser Ala Lys Ala Glu Ser Lys Lys Asp  
 25 30 35

gat act gat ttg aag tta gtt agt cat aac gtt tat atg tta tcg acc	916
Asp Thr Asp Leu Lys Leu Val Ser His Asn Val Tyr Met Leu Ser Thr	
40 45 50 55	
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Val Leu Tyr Pro Asn Trp Gly Gln Tyr Lys Arg Ala Asp Leu Ile Gly	
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caa tct tct tat att aaa aat aat gat gtc gta ata ttc aat gaa gca	1012
Gln Ser Ser Tyr Ile Lys Asn Asn Asp Val Val Ile Phe Asn Glu Ala	
75 80 85	
ttt gat aat ggt gca tca gac aaa tta tta agt aat gtg aaa aaa gaa	1060
Phe Asp Asn Gly Ala Ser Asp Lys Leu Leu Ser Asn Val Lys Lys Glu	
90 95 100	
tat cct tat caa aca cct gta ctc ggc cgt tct caa tca ggg tgg gac	1108
Tyr Pro Tyr Gln Thr Pro Val Leu Gly Arg Ser Gln Ser Gly Trp Asp	
105 110 115	
aaa act gaa ggt agc tac tca tca act gtt gca gaa gat ggt ggc gta	1156
Lys Thr Glu Gly Ser Tyr Ser Ser Thr Val Ala Glu Asp Gly Gly Val	
120 125 130 135	
gcg att gta agt aaa tat cct att aaa gaa aaa atc cag cat gtt ttc	1204
Ala Ile Val Ser Lys Tyr Pro Ile Lys Glu Lys Ile Gln His Val Phe	
140 145 150	
aaa agc ggt tgt gga ttc gat aat gat agc aac aaa ggc ttt gtt tat	1252
Lys Ser Gly Cys Gly Phe Asp Asn Asp Ser Asn Lys Gly Phe Val Tyr	
155 160 165	
aca aaa ata gag aaa aat ggt aag aac gtt cac gtt atc ggt aca cat	1300
Thr Lys Ile Glu Lys Asn Gly Lys Asn Val His Val Ile Gly Thr His	
170 175 180	
aca caa tct gaa gat tca cgt tgt ggt gct gga cat gat cga aaa att	1348
Thr Gln Ser Glu Asp Ser Arg Cys Gly Ala Gly His Asp Arg Lys Ile	
185 190 195	
aga gct gaa caa atg aaa gaa atc agt gac ttt gtt aaa aag aaa aat	1396
Arg Ala Glu Gln Met Lys Glu Ile Ser Asp Phe Val Lys Lys Lys Asn	
200 205 210 215	
atc cct aaa gat gaa acg gta tat ata ggt ggc gac ctt aat gtc aat	1444
Ile Pro Lys Asp Glu Thr Val Tyr Ile Gly Gly Asp Leu Asn Val Asn	
220 225 230	
aaa ggc act cca gag ttc aaa gat atg ctt aaa aac ttg aat gta aat	1492
Lys Gly Thr Pro Glu Phe Lys Asp Met Leu Lys Asn Leu Asn Val Asn	
235 240 245	
gat gtt cta tat gca ggt cat aat agc aca tgg gac cct caa tca aat	1540
Asp Val Leu Tyr Ala Gly His Asn Ser Thr Trp Asp Pro Gln Ser Asn	
250 255 260	

137

Asn Val Tyr Met Leu Ser Thr Val Leu Tyr Pro Asn Trp Gly Gln Tyr  
50 55 60

Lys Arg Ala Asp Leu Ile Gly Gln Ser Ser Tyr Ile Lys Asn Asn Asp  
65 70 75 80

Val Val Ile Phe Asn Glu Ala Phe Asp Asn Gly Ala Ser Asp Lys Leu  
85 90 95

Leu Ser Asn Val Lys Lys Glu Tyr Pro Tyr Gln Thr Pro Val Leu Gly  
100 105 110

Arg Ser Gln Ser Gly Trp Asp Lys Thr Glu Gly Ser Tyr Ser Ser Thr  
115 120 125

Val Ala Glu Asp Gly Gly Val Ala Ile Val Ser Lys Tyr Pro Ile Lys  
130 135 140

Glu Lys Ile Gln His Val Phe Lys Ser Gly Cys Gly Phe Asp Asn Asp  
145 150 155 160

Ser Asn Lys Gly Phe Val Tyr Thr Lys Ile Glu Lys Asn Gly Lys Asn  
165 170 175

Val His Val Ile Gly Thr His Thr Gln Ser Glu Asp Ser Arg Cys Gly  
180 185 190

Ala Gly His Asp Arg Lys Ile Arg Ala Glu Gln Met Lys Glu Ile Ser  
195 200 205

Asp Phe Val Lys Lys Lys Asn Ile Pro Lys Asp Glu Thr Val Tyr Ile  
210 215 220

Gly Gly Asp Leu Asn Val Asn Lys Gly Thr Pro Glu Phe Lys Asp Met  
225 230 235 240

Leu Lys Asn Leu Asn Val Asn Asp Val Leu Tyr Ala Gly His Asn Ser  
245 250 255

Thr Trp Asp Pro Gln Ser Asn Ser Ile Ala Lys Tyr Asn Tyr Pro Asn  
260 265 270

Gly Lys Pro Glu His Leu Asp Tyr Ile Phe Thr Asp Lys Asp His Lys  
275 280 285

Gln Pro Lys Gln Leu Val Asn Glu Val Val Thr Glu Lys Pro Lys Pro  
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Trp Asp Val Tyr Ala Phe Pro Tyr Tyr Tyr Val Tyr Asn Asp Phe Ser  
305 310 315 320

Asp His Tyr Pro Ile Lys Ala Tyr Ser Lys  
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<210> 83  
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<212> DNA  
<213> Streptococcus agalactiae

<220>  
<221> CDS  
<222> (7062)..(8207)

<223>

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aacatcatcc acgtcaagag ggattgacgac aatttcgtca cgtttcaatt ttgagttgag 180  
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gaaagaatta tgcaggcctt gatcataact cagataagga taatcttcta aatctttcat 360  
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Ile Ile Val Leu Leu Leu Leu Trp Lys Ser Glu Phe Arg Ile Ser Ile  
 35 40 45

Ser Asn Ser Ser Ile Leu Phe Leu Leu Trp Leu Phe Ile Tyr Leu Phe  
 50 55 60

Ala Ile Leu Ile Arg Gly Thr Gln Glu Asp Ile Thr Phe Gln Arg Phe  
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Ile Ala Glu Leu Leu Lys Leu Ile Ser Thr Gly Tyr Ala Leu Phe Phe  
 85 90 95

Tyr Asn Tyr Tyr Arg Lys Ala Asp Phe Asn Ser Ser Val Val Arg Asn  
 100 105 110

Val Val Lys Val Asn Tyr Phe Val Leu Phe Leu Ile Thr Val Leu Tyr  
 115 120 125

Leu Phe Phe Pro Met Leu Lys Pro Thr Leu Phe Gly Arg Glu Leu Phe  
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Ser Ile Glu Trp Phe Pro His Met Arg Ile Arg Leu Ala Ala Tyr Phe  
 145 150 155 160

Glu Tyr Ala Thr Leu Ile Gly Gln Phe Ile Leu Phe Ser Tyr Pro Ile  
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Leu Phe Leu Lys Pro Gln Lys His Met Glu Asn Ile Leu Ile Ser Leu  
 180 185 190

Leu Leu Thr Ile Cys Ser Tyr Phe Ser Gly Ala Arg Ile Leu Leu Val  
 195 200 205

Cys Met Leu Val Leu Leu Ala Ser Leu Leu Leu Asp Tyr Ile Leu Phe  
 210 215 220

Lys Thr Asn Leu Lys Leu Thr Lys Lys Asn Thr Phe Ile Leu Gly Met  
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Thr Phe Leu Phe Ile Thr Ala Cys Phe Ser Tyr Asn Ile Trp Ser Ile  
 245 250 255

Ile Glu Lys Ile Ile Met Tyr Arg Asn Gln Ser Thr Ile Thr Arg Met  
 260 265 270

Ile Val Tyr Gln Glu Ser Ile Ile Glu Val Leu Lys Gly Asn Ile Leu  
 275 280 285

Phe Gly Gln Gly Ile Arg Ile Pro Ser Ser Glu Gly Ile Phe Leu Gly  
 290 295 300

Ser His Ser Thr Tyr Ile Ser Val Phe Tyr Arg Thr Ser Leu Leu Gly  
 305 310 315 320

Ile Val Leu Tyr Phe Ser Ala Phe Ile Leu Leu Tyr Lys Glu Ala Ile  
 325 330 335

Ser Lys Asn Tyr Lys Ile Tyr Arg Leu Phe Phe Tyr Thr Leu Leu Cys  
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Thr Ser Arg Val Asp Asp Leu Ala Asn Lys Ala Tyr Ser Val Tyr Phe  
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gca ttt gtt agg gat aca caa cat aaa act gag gca tta gag tta aaa 796  
Ala Phe Val Arg Asp Thr Gln His Lys Thr Glu Ala Leu Glu Leu Lys  
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gcg aaa gta gat tta gtt tta ggt gat gag gat aaa ccg cat cgt att 844  
Ala Lys Val Asp Leu Val Leu Gly Asp Glu Asp Lys Pro His Arg Ile  
220 225 230

tct aat gaa aga att gaa aaa gaa atg ata aaa gat tta gaa tct att 892  
Ser Asn Glu Arg Ile Glu Lys Glu Met Ile Lys Asp Leu Glu Ser Ile  
235 240 245

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Ile Glu Asp Phe Phe Ile Glu Thr Gly Leu Asn Lys Pro Gly Asn Ile  
250 255 260

acg agt tat gat agt agt aaa cat cac tat aaa aat cac agt gaa ggt 988  
Thr Ser Tyr Asp Ser Ser Lys His His Tyr Lys Asn His Ser Glu Gly  
265 270 275 280

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Phe Glu Ala Leu Val Lys Glu Thr Arg Glu Ala Val Ala Asn Ala Asp  
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Glu Ser Trp Lys Thr Lys Thr Val Lys Lys Tyr Gly Glu Ser Glu Thr  
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Lys Ser Pro Val Val Lys Glu Glu Asn Lys Val Glu Asp Pro Gln Ser  
315 320 325

cct aaa ttt gat aac caa caa gag gtt aaa act acg gct ggt aaa gct 1180  
Pro Lys Phe Asp Asn Gln Gln Glu Val Lys Thr Thr Ala Gly Lys Ala  
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Glu Glu Thr Thr Gln Pro Val Ala Gln Pro Leu Val Lys Ile Pro Gln  
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ggc aca att aca ggt gaa att gtg aaa ggt ccg gaa tat cca acg atg 1276  
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365 370 375

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475 480 485	
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Gly Thr Phe Gly Tyr Glu Ala Arg Pro Arg Phe Asn Lys Pro Ser Glu	
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Thr Asn Ala Tyr Asn Val Thr Thr Asn Gln Asp Gly Thr Val Ser Tyr	
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ggc gcc cgc cca aca caa aac aag gca tca gaa aca aac gca tat aac	1756
Gly Ala Arg Pro Thr Gln Asn Lys Ala Ser Glu Thr Asn Ala Tyr Asn	
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Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr	
540 545 550	
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Gln Lys Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala	
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Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Asn Lys Pro Ser	
570 575 580	
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Glu Thr Asn Ala Tyr Asn Val Thr Thr His Gly Asn Gly Gln Val Ser	
585 590 595 600	
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Tyr Gly Ala Arg Pro Thr Tyr Lys Lys Pro Ser Lys Thr Asn Ala Tyr	
605 610 615	

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Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His	
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685 690 695	
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Tyr Asn Val Thr Thr His Ala Asp Gly Thr Ala Thr Tyr Gly Pro Arg	
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Val Thr Lys	
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Ile Asn Ala Leu Asp Ile Leu Glu Thr Tyr His Tyr Gly Glu Lys Glu  
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Tyr Lys Asp Ala Lys Asp Lys Leu Met Thr Arg Ile Leu Gly Glu Asp  
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Gln Tyr Leu Leu Glu Arg Lys Lys Val Gln Tyr Glu Glu Tyr Lys Lys  
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Leu Lys Thr Phe Asp Gln Tyr Thr Ile Glu Asp Leu Thr Met Arg Glu  
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Tyr Asn Glu Leu Thr Glu Ser Leu Lys Ser Ala Val Lys Asp Phe Glu  
 145 150 155 160

Lys Asp Val Glu Lys Ile Glu Asn Gln His His Asp Leu Lys Pro Phe  
 165 170 175

Thr Asp Glu Met Glu Glu Lys Ala Thr Ser Arg Val Asp Asp Leu Ala  
 180 185 190

Asn Lys Ala Tyr Ser Val Tyr Phe Ala Phe Val Arg Asp Thr Gln His  
 195 200 205

Lys Thr Glu Ala Leu Glu Leu Lys Ala Lys Val Asp Leu Val Leu Gly  
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Asp Glu Asp Lys Pro His Arg Ile Ser Asn Glu Arg Ile Glu Lys Glu  
 225 230 235 240

Met Ile Lys Asp Leu Glu Ser Ile Ile Glu Asp Phe Phe Ile Glu Thr  
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Gly Leu Asn Lys Pro Gly Asn Ile Thr Ser Tyr Asp Ser Ser Lys His  
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His Tyr Lys Asn His Ser Glu Gly Phe Glu Ala Leu Val Lys Glu Thr  
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Lys Lys Tyr Gly Glu Ser Glu Thr Lys Ser Pro Val Val Lys Glu Glu  
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Val Lys Thr Thr Ala Gly Lys Ala Glu Glu Thr Thr Gln Pro Val Ala  
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Glu Ser Thr Leu Lys Gly Ile Gln Gly Glu Ser Ser Asp Ile Glu Val  
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Thr Gly Ile Arg Glu Tyr Asn Asp Gly Thr Phe Gly Tyr Glu Ala Arg  
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Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr  
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Val Ser Tyr Gly Ala Arg Pro Thr Gln Lys Lys Pro Ser Glu Thr Asn  
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Arg Pro Thr Tyr Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr  
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Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Lys  
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Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly  
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Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr  
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Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly  
645 650 655

Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val  
660 665 670

Thr Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr  
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tatgatgact ttacaaatac atacaggggg tattaat ttg aaa aag aaa aac att	715
Leu Lys Lys Lys Asn Ile	
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Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly	
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Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln	
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His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro	
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Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp	
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Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn	
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Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn	
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Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln	
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Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe	
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Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly	
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Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu	
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Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn	
200 205 210	

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Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu	
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cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa	1435
Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys	
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gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta	1483
Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu	
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Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln	
265 270 275	
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Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu	
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Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro	
330 335 340	
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Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro	
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Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala	
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Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser  
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Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys  
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Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln  
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Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly  
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Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu  
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Val Lys Pro Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr  
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Ile Lys Pro Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn  
450 455 460

His Ala Asp Ala Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu  
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 Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn  
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aaa gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta 192  
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&lt;211&gt; 104

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&lt;400&gt; 90

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Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn  
 35 40 45



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Tyr Gly Lys Ile Ile Phe Val Leu Leu Ser Ala Ile Val Ser Ile	
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Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser Ser	
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Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His Lys	
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Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu Ile	
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Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val	
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Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile Phe	
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Glu Thr Ser Asp Gln	
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Lys Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu  
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Ile Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg  
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Val Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile  
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Phe Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr  
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Gly Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu  
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Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val
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Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu Phe Gln Lys Trp
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Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly Glu Asp Leu Phe
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Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly
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tgc tcc aga ggt tat gaa gcc atg tat acg cta cta ggc aat gcc aat      595
Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu Gly Asn Ala Asn
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gga gca acc tgt gca ttc ccg ttc aag ttt gaa aac aag tgg tac gca      643
Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn Lys Trp Tyr Ala
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Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser Ile Thr Glu Ile	
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Lys	Leu	Tyr	Ala	Lys	Gly	Lys	His	Glu	Lys	Lys	Thr	Trp	Phe	Glu	Ser	
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cga	gat	ttt	tgt	cga	gct	ctg	ggc	gga	gac	tta	gct	agc	atc	aat	aac	2179
Arg	Asp	Phe	Cys	Arg	Ala	Leu	Gly	Gly	Asp	Leu	Ala	Ser	Ile	Asn	Asn	
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Lys	Glu	Glu	Gln	Gln	Thr	Ile	Trp	Arg	Leu	Ile	Thr	Ala	Ser	Gly	Ser	
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Tyr	His	Lys	Leu	Phe	Trp	Leu	Gly	Leu	Thr	Tyr	Gly	Ser	Pro	Ser	Glu	
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Gly	Phe	Thr	Trp	Ser	Asp	Gly	Ser	Pro	Val	Ser	Tyr	Glu	Asn	Trp	Ala	
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Lys	Gly	Asp	Pro	Thr	Met	Ser	Trp	Asn	Asp	Ile	Asn	Cys	Glu	His	Leu	
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Asn	Asn	Trp	Ile	Cys	Gln	Ile	Gln	Lys	Gly	Gln	Thr	Pro	Lys	Pro	Glu	
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Pro	Thr	Pro	Ala	Pro	Gln	Asp	Asn	Pro	Pro	Val	Thr	Glu	Asp	Gly	Trp	
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Met	Asp	Asn	Ala	Arg	Ala	Phe	Cys	Lys	Arg	Asn	Phe	Gly	Asp	Leu	Val	
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Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu Leu Ile Ser Leu	
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Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val Asp Tyr Val Ser	
870 875 880	
tgg gcc aca ggt gaa ccc aat ttt gca aat gaa gat gaa aac tgt gtg	2803
Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp Glu Asn Cys Val	
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Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile Asn Cys Gly Tyr	
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Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser Ile Asn Ala Thr	
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Trp Asn Phe Tyr Ser Asn Lys Cys Phe Lys Ile Phe Gly Phe Met Glu	
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Tyr Gly Lys Ser	Ser Tyr Ser Leu Met	Arg Gln Lys Phe Gln Trp	
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His Glu Ala Glu	Thr Tyr Cys Lys Leu	His Asn Ser Leu Ile Ala	
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Ser Ile Leu Asp	Pro Tyr Ser Asn Ala	Phe Ala Trp Leu Gln Met	
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Glu Thr Ser Asn	Glu Arg Val Trp Ile	Ala Leu Asn Ser Asn Leu	
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Thr Asp Asn Gln	Tyr Thr Trp Thr Asp	Lys Trp Arg Val Arg Tyr	
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1180	1185	1190	
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Tyr Leu Asp Leu	Asp Gly Tyr Trp Lys	Thr Ala His Cys Asn Glu	
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Tyr Thr Arg Asn	Trp Gly Gln Ala Ser	Leu Glu Cys Leu Arg Met	
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Gly Ser Ser Leu	Val Ser Ile Glu Ser	Ala Ala Glu Ser Ser Phe	
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Leu Ser Tyr Arg Val Glu Pro Leu Lys Ser Lys Thr Asn Phe Trp	
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Ile Gly Leu Phe Arg Asn Val Glu Gly Thr Trp Leu Trp Ile Asn	
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Gly Glu Arg Asn Asp Cys Val Ala Leu His Ala Ser Ser Gly Phe	
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Gly Asn Ala Asn Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn  
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Lys Trp Tyr Ala Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu  
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Trp Cys Gly Thr Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr  
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Cys Pro Leu Lys Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro  
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Leu Thr Ser Val Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp  
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His Gln Ala Arg Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser  
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Ile Thr Glu Ile His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser  
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Gly Tyr Ile Cys Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile  
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Thr Pro Glu Pro Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr  
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Ser Leu Cys Phe Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr  
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Trp Phe Glu Ser Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala  
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Ser Ile Asn Asn Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr  
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Ala Ser Gly Ser Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly  
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Ser Pro Ser Glu Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr  
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Glu Asn Trp Ala Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr  
740 745 750

Cys Gly Glu Leu Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn  
755 760 765

Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr  
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Ser Asn Leu Thr Asp Asn Gln Tyr Thr Trp Thr Asp Lys Trp Arg  
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Tyr Phe Asn Ser Gln Ser Ser Pro Gly Thr Ser Asp Met Lys Asp  
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1449

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Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu  
50 55 60

Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala  
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His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys  
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Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu  
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Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile  
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Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe  
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Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu Asp Asp	
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Ser Tyr Ile Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu  
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Ile Leu Asn Lys Gly Phe Leu Ile Val Ile Ser Thr Ile Leu Leu Leu  
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Thr Phe Ser Leu Phe Phe Phe Tyr Ser Gln Ile Asn Ser Asp Glu Ala  
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Lys Val Ile Arg Gln Tyr Ser Leu Phe Tyr Trp Tyr His Tyr Ile Leu  
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Ser Ile Leu Thr Leu Tyr Ser Gln Phe Leu Leu Lys Glu Met Lys Tyr  
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Lys Arg Asn Gln Glu Glu Ile Glu Thr Tyr Tyr Glu Tyr Thr Leu Lys  
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Gly Leu Arg Asp Tyr Phe Asn Lys Asn Ile Val Pro Met Lys Asp Asn  
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Asn Met Asn Asp Ile Gly Cys Tyr Phe Leu Asp Ile Gln Leu Ser Thr  
50 55 60

Asp Ile Asn Gly Ile Lys Leu Gly Ser Glu Ile Arg Lys His Asp Pro  
65 70 75 80







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Asn	Tyr	Asp	Leu	Val	Ile	Asn	Leu	Thr	Asp	Gln	Trp	Met	Val	Ala	Leu	
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Leu	Val	Arg	Cys	Leu	Pro	Ala	Arg	Met	Lys	Ile	Ser	Gln	Leu	Tyr	Gly	
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Ile	His	Gly	Thr	His	Ile	Val	Glu	Arg	Asn	Leu	Ser	Val	Leu	Glu	Pro	
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Asp	His	Tyr	Val	Val	Ile	Gln	Pro	Thr	Ala	Arg	Gln	Ile	Phe	Lys	Cys	
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Trp	Asp	Asn	Asp	Lys	Phe	Ser	Lys	Val	Ile	Asp	Ala	Leu	Gln	Gln	Arg	
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Cys	Val	Asp	Glu	Ile	Ala	Arg	Gly	Cys	Glu	Thr	Lys	Pro	Ile	Thr	Gly	
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Leu Ser Val Ile Pro Ala Glu Asp Val Ile Ala Ala Thr Glu Lys Leu	
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Leu Pro Glu Asp Ala Pro Ser Ala Asp Arg Asn Ala Gln Leu Ile	
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Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln Arg	
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Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His Val	
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Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe Glu	
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Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn Ala	
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Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala Asp	
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Pro	Leu	Arg	Met	Ala	Trp	Ala	Glu	Asn	Ala	Arg	His	Tyr	Ala	Asp	Thr	
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Gln	Asp	Leu	Tyr	Ser	Leu	Pro	Glu	Lys	Ala	Ala	Asp	Ile	Ile	Thr	Gly</	

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Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr Phe Asp Ile Ile Tyr	
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Leu	Glu	Ala	Leu	Phe	Phe	Asn	Lys	Lys	Leu	Ile	Thr	Asn	Asn	Ile	
		1220					1225					1230			
aat	gta	ttt	ggc	tca	gaa	atc	tat	agt	gaa	tct	cgc	ttt	ttt	ata	4226
Asn	Val	Phe	Gly	Ser	Glu	Ile	Tyr	Ser	Glu	Ser	Arg	Phe	Phe	Ile	
		1235					1240					1245			
ata	ggt	cat	gat	gat	tgg	gat	aag	tta	gag	tat	ttt	att	aac	tca	4271
Ile	Gly	His	Asp	Asp	Trp	Asp	Lys	Leu	Glu	Tyr	Phe	Ile	Asn	Ser	
		1250					1255					1260			
tct	gtt	aaa	cca	atg	gat	tat	gat	agt	tta	tat	aaa	ttc	agt	cca	4316
Ser	Val	Lys	Pro	Met	Asp	Tyr	Asp	Ser	Leu	Tyr	Lys	Phe	Ser	Pro	
		1265					1270					1275			
gat	aaa	atg	atg	tca	acg	att	gtt	tct	gat	ttt	ata	gac	aaa	taa	4361
Asp	Lys	Met	Met	Ser	Thr	Ile	Val	Ser	Asp	Phe	Ile	Asp	Lys		
		1280					1285					1290			
aaccggttaaaa	aca	gtg	agt	ttt	act		caa	tta	atg	aga	gtt	tct	atg	aaa	4410
	Val	Ser	Phe	Thr	Gln	Leu	Met	Arg	Val	Ser	Met	Lys			
					1295						1300				
ata	gcg	ttt	atc	ggc	gaa	gct	gtt	tct	gga	ttt	ggc	ggc	atg	gaa	4455
Ile	Ala	Phe	Ile	Gly	Glu	Ala	Val	Ser	Gly	Phe	Gly	Gly	Met	Glu	
		1305					1310				1315				
act	gtc	atc	cgt	gat	gtt	att	act	acc	ttc	agg	caa	caa	cat	atc	4500
Thr	Val	Ile	Arg	Asp	Val	Ile	Thr	Thr	Phe	Arg	Gln	Gln	His	Ile	
		1320					1325				1330				
caa	agt	gaa	atg	ttt	ttc	ttt	tgt	cgt	aat	gac	aaa	atg	gat	aag	4545
Gln	Ser	Glu	Met	Phe	Phe	Phe	Cys	Arg	Asn	Asp	Lys	Met	Asp	Lys	
		1335					1340				1345				
gga	tgg	ctg	gaa	ggt	att	aaa	tac	tca	tgt	tca	ttt	tcc	aat	att	4590
Gly	Trp	Leu	Glu	Gly	Ile	Lys	Tyr	Ser	Cys	Ser	Phe	Ser	Asn	Ile	

cgt tta ggt ttt ttg cgt cgg gcg aaa cat att cat gct cta agt	4635
Arg Leu Gly Phe Leu Arg Arg Ala Lys His Ile His Ala Leu Ser	
1365 1370 1375	
aaa tgg ctt cag gag tac caa cca gat atc gtt att tgt att gat	4680
Lys Trp Leu Gln Glu Tyr Gln Pro Asp Ile Val Ile Cys Ile Asp	
1380 1385 1390	
gtg atc tcc tgc ctg ttt gcc gca aaa gca cgt aaa aaa tca gga	4725
Val Ile Ser Cys Leu Phe Ala Ala Lys Ala Arg Lys Lys Ser Gly	
1395 1400 1405	
att gat atg cca gta ttt tca tgg cca cat ttt tct tta gat cac	4770
Ile Asp Met Pro Val Phe Ser Trp Pro His Phe Ser Leu Asp His	
1410 1415 1420	
aaa aaa cat gct gaa tat atc acc tgt gcc gac tat cat tta gca	4815
Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr His Leu Ala	
1425 1430 1435	
atc agc tct ggc att aaa cag caa atg att aat cga ggt gta gca	4860
Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly Val Ala	
1440 1445 1450	
gaa tcg acg ata aat gtt att ttt aat ccc gtc gaa act aaa gac	4905
Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys Asp	
1455 1460 1465	
tca gtc att ccc gcg ccc gag gaa ggt gaa acg gca acg ttt att	4950
Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile	
1470 1475 1480	
tat gtt ggg cgt atg aaa ttt gaa ggc cag aaa aga gtt aaa gac	4995
Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp	
1485 1490 1495	
ctg ctt gat ggc tta tca caa gcg aaa ggt aac tgg aaa ctc cat	5040
Leu Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His	
1500 1505 1510	
gta ttg ggt gat ggc tcc gat ttc gaa aaa tgc cag gct tat ggt	5085
Val Leu Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly	
1515 1520 1525	
aga gaa tta aat att gat gat cga att gtc tgg tat ggt tgg caa	5130
Arg Glu Leu Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln	
1530 1535 1540	
caa tat ccc tgg gaa ttg gtc cag caa gat att gaa aaa gtg agt	5175
Gln Tyr Pro Trp Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser	
1545 1550 1555	
gcg tta ttg ctc acg tca tct ttt gaa ggt ttc cca atg acc cta	5220
Ala Leu Leu Leu Thr Ser Ser Phe Glu Gly Phe Pro Met Thr Leu	
1560 1565 1570	



ctt gaa gcc ttg tcg tgg ggg att cct tgt atc agt gcc gat tgt	5265
Leu Glu Ala Leu Ser Trp Gly Ile Pro Cys Ile Ser Ala Asp Cys	
1575 1580 1585	
gtc tcc ggg cct gct gac att att caa cct gat gtc aat ggc cat	5310
Val Ser Gly Pro Ala Asp Ile Ile Gln Pro Asp Val Asn Gly His	
1590 1595 1600	
ctg tat caa ccg gga gat att gct ggt ttt gta act ctt cta aat	5355
Leu Tyr Gln Pro Gly Asp Ile Ala Gly Phe Val Thr Leu Leu Asn	
1605 1610 1615	
aaa tat ata gca ggt gaa att cat atc gaa cat gaa aaa att cct	5400
Lys Tyr Ile Ala Gly Glu Ile His Ile Glu His Glu Lys Ile Pro	
1620 1625 1630	
gcg tcg atc gat gaa ttt tac caa tcg aag tat tac gat aga tta	5445
Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys Tyr Tyr Asp Arg Leu	
1635 1640 1645	
cat aag gta att att tct gct att tcc cgg agg aaa ta atg cag cag	5492
His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg Lys Met Gln Gln	
1650 1655 1660	
gtg ttt ttc cag gaa act gag ttt ctt aat tca gtt att gat tat	5537
Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile Asp Tyr	
1665 1670 1675	
gat cat aaa gta gaa aca gaa aat ctt tgt ctg gac atc gct tat	5582
Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala Tyr	
1680 1685 1690	
gga act gac aaa aac ttt cta ttt ggt tgc gga att tcg att gct	5627
Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala	
1695 1700 1705	
tca ata tta aaa tat aat gaa gga agt cga ttg tgt ttc cat att	5672
Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile	
1710 1715 1720	
ttt act gat tat ttt ggt gat gat gat cgt aag tat ttt gat gcc	5717
Phe Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala	
1725 1730 1735	
ctg gcg ttg cag tat aaa acc aga att aaa ata tat ctg att aat	5762
Leu Ala Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn	
1740 1745 1750	
ggt gat cga ctg cgc tca ttg cct agc act aag aat tgg act cat	5807
Gly Asp Arg Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His	
1755 1760 1765	
gca ata tat ttt cgt ttt gtt att gca gat tac ttt att aat aag	5852
Ala Ile Tyr Phe Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys	
1770 1775 1780	

gcg cct	aaa gtc	ctt tat	ctg	gat gca	gat atc	att	tgt cag	ggg	5897
Ala Pro	Lys Val	Leu Tyr	Leu	Asp Ala	Asp Ile	Ile	Cys Gln	Gly	
1785			1790					1795	
act att	gag cca	cta att	aat	ttc tca	ttt cct	gac	gat aaa	gtc	5942
Thr Ile	Glu Pro	Leu Ile	Asn	Phe Ser	Phe Pro	Asp	Asp Lys	Val	
1800			1805					1810	
gca atg	gtt gtt	aca gaa	ggg	caa gct	gac tgg	tgg	gaa aaa	cgc	5987
Ala Met	Val Val	Thr Glu	Gly	Gln Ala	Asp Trp	Trp	Glu Lys	Arg	
1815			1820					1825	
gcc cat	tcg tta	ggg gtt	gcg	gga att	gct aaa	ggg	tac ttt	aac	6032
Ala His	Ser Leu	Gly Val	Ala	Gly Ile	Ala Lys	Gly	Tyr Phe	Asn	
1830			1835					1840	
tcc ggt	ttt tta	ttg att	aat	act gcc	caa tgg	gcg	gct cag	cag	6077
Ser Gly	Phe Leu	Leu Ile	Asn	Thr Ala	Gln Trp	Ala	Ala Gln	Gln	
1845			1850					1855	
gtt tct	gca cga	gct att	gca	atg cta	aat gag	cca	gaa ata	atc	6122
Val Ser	Ala Arg	Ala Ile	Ala	Met Leu	Asn Glu	Pro	Glu Ile	Ile	
1860			1865					1870	
aaa aaa	ata aca	cat cct	gat	cag gat	gtg tta	aat	atg ttg	ctg	6167
Lys Lys	Ile Thr	His Pro	Asp	Gln Asp	Val Leu	Asn	Met Leu	Leu	
1875			1880					1885	
gcg gat	aaa ctt	att ttc	gct	gat att	aaa tat	aac	acc cag	ttc	6212
Ala Asp	Lys Leu	Ile Phe	Ala	Asp Ile	Lys Tyr	Asn	Thr Gln	Phe	
1890			1895					1900	
agc tta	aat tat	caa ctc	aaa	gaa agc	ttt ata	aac	cca gta	acc	6257
Ser Leu	Asn Tyr	Gln Leu	Lys	Glu Ser	Phe Ile	Asn	Pro Val	Thr	
1905			1910					1915	
aac gat	act att	ttt atc	cat	tat atc	ggg cca	acc	aag ccc	tgg	6302
Asn Asp	Thr Ile	Phe Ile	His	Tyr Ile	Gly Pro	Thr	Lys Pro	Trp	
1920			1925					1930	
cat gat	tgg gcc	tgg gat	tat	cct gta	tca caa	gcc	ttt atg	gag	6347
His Asp	Trp Ala	Trp Asp	Tyr	Pro Val	Ser Gln	Ala	Phe Met	Glu	
1935			1940					1945	
gca aaa	aat gct	tcg cca	tgg	aag aat	acg gcg	ttg	ctg aaa	ccg	6392
Ala Lys	Asn Ala	Ser Pro	Trp	Lys Asn	Thr Ala	Leu	Leu Lys	Pro	
1950			1955					1960	
aac aat	agc aat	caa tta	aga	tat agc	gca aaa	cat	atg ctt	aaa	6437
Asn Asn	Ser Asn	Gln Leu	Arg	Tyr Ser	Ala Lys	His	Met Leu	Lys	
1965			1970					1975	
aag cat	aga tat	cta aaa	gga	ttt agc	aac tat	ctt	ttt tat	ttt	6482
Lys His	Arg Tyr	Leu Lys	Gly	Phe Ser	Asn Tyr	Leu	Phe Tyr	Phe	
1980			1985					1990	



gca aaa cta aca gaa aaa gcg ttg tct att ctt atg agt aaa gat 7166  
Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp  
2195 2200 2205

aat gtt tat aaa tac cct gat cag gat gtt atg aat gtc tta ctg 7211  
Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu  
2210 2215 2220

aaa ggg atg aca tta ttt ttg cct cgt gag tac aat aca att tat 7256  
Lys Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr  
2225 2230 2235

aca att aaa agt gaa tta aaa gac aaa aca cat caa aac tat aaa 7301  
Thr Ile Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys  
2240 2245 2250

aag ctg att aca gaa agt act ctt ctt att cat tat aca ggt gca 7346  
Lys Leu Ile Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala  
2255 2260 2265

act aaa ccg tgg cac aaa tgg gca att tat cca tcg gta aaa tac 7391  
Thr Lys Pro Trp His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr  
2270 2275 2280

tat aaa ata gct tta gaa aat tcc ccc tgg aaa gat gac tct cca 7436  
Tyr Lys Ile Ala Leu Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro  
2285 2290 2295

cga gat gcg aaa tca att att gaa ttt aaa aaa gat ata aac atc 7481  
Arg Asp Ala Lys Ser Ile Ile Glu Phe Lys Lys Asp Ile Asn Ile  
2300 2305 2310

ttt tag tgcaacatca tt 7499  
Phe

<210> 106  
<211> 344  
<212> PRT  
<213> Escherichia coli

<400> '106

Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr  
1 5 10 15

Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln  
20 25 30

Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr  
35 40 45



Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr  
 275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr  
 290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala  
 305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro  
 325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu  
 340

<210> 107

<211> 371

<212> PRT

<213> Escherichia coli

<400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln  
 1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His  
 20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe  
 35 40 45

Glu Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn  
 50 55 60

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala  
 65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe  
 85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe  
 100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg  
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp  
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg  
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu  
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys  
180 185 190

Glu Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys  
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu  
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys  
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe  
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu  
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu  
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr  
290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro  
305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln  
325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp  
 340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr  
 355 360 365

Gly Gly Leu  
 370

<210> 108  
 <211> 265  
 <212> PRT  
 <213> Escherichia coli

<400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp  
 1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu  
 20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe  
 35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu  
 50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala  
 65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly  
 85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile  
 100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp  
 115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala  
 130 135 140





Lys Lys Asp Asp Ile Ile Ile Ile Asn Asp Ser Val Val Asn Lys Gly  
65 70 75 80

Ile Asn Lys Gln Ile Leu Lys Asn Ile Asn Cys His Lys Val Leu Leu  
85 90 95

Leu Arg Asn Thr Val Gly Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr  
100 105 110

Phe Asp Ile Ile Tyr Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys  
115 120 125

Ile Lys Ala Ile Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg  
130 135 140

Asn Tyr Ser Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe  
145 150 155 160

Leu Gly Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu  
165 170 175

Arg Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp  
180 185 190

Lys Thr Ser Ser Thr Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile Ser  
195 200 205

Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile Val Asp  
210 215 220

Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile Leu Glu Ala  
225 230 235 240

Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile Asn Val Phe Gly  
245 250 255

Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile Ile Gly His Asp Asp  
260 265 270

Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser Ser Val Lys Pro Met Asp  
275 280 285

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile  
 290 295 300

Val Ser Asp Phe Ile Asp Lys  
 305 310

<210> 110

<211> 369

<212> PRT

<213> Escherichia coli

<400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile  
 1 5 10 15

Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp  
 20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe  
 35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys  
 50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala  
 65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp  
 85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala  
 100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe  
 115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr  
 130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly  
 145 150 155 160

[illegible]

Val Ala Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys  
165 170 175

Asp Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile  
180 185 190

Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp Leu  
195 200 205

Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His Val Leu  
210 215 220

Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly Arg Glu Leu  
225 230 235 240

Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln Gln Tyr Pro Trp  
245 250 255

Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser Ala Leu Leu Leu Thr  
260 265 270

Ser Ser Phe Glu Gly Phe Pro Met Thr Leu Leu Glu Ala Leu Ser Trp  
275 280 285

Gly Ile Pro Cys Ile Ser Ala Asp Cys Val Ser Gly Pro Ala Asp Ile  
290 295 300

[illegible]

Gly Phe Val Thr Leu Leu Asn Lys Tyr Ile Ala Gly Glu Ile His Ile  
325 330 335

Glu His Glu Lys Ile Pro Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys  
340 345 350

Tyr Tyr Asp Arg Leu His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg  
355 360 365

Lys

<210> 111  
 <211> 339  
 <212> PRT  
 <213> Escherichia coli

<400> 111

Met Gln Gln Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile  
 1 5 10 15

Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala  
 20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala  
 35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe  
 50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala  
 65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg  
 85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe  
 100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu  
 115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile  
 130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly  
 145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly  
 165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala  
 180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn  
 195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu  
 210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn  
 225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro  
 245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro  
 260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu  
 275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn  
 290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His  
 305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys  
 325 330 335

Ile Lys His

<210> 112

<211> 314

<212> PRT

<213> Escherichia coli

<400> 112

Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys Ala Trp Asp  
 1 5 10 15

Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu Asn Val Ala Tyr  
 20 25 30

Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly Val Ser Ile Thr Ser  
35 40 45

Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala  
50 55 60

Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu  
65 70 75 80

Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu  
85 90 95

Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg  
100 105 110

Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr  
115 120 125

Leu Asp Ala Asp Val Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His  
130 135 140

Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro  
145 150 155 160

Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly  
165 170 175

Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala  
180 185 190

Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp  
195 200 205

Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys  
210 215 220

Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile  
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile  
245 250 255

Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp  
 260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu  
 275 280 285

Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro Arg Asp Ala Lys Ser Ile  
 290 295 300

Ile Glu Phe Lys Lys Asp Ile Asn Ile Phe  
 305 310

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 Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His  
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 Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu  
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 Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe  
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 Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro  
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Leu Pro	Thr Val	Pro Ala	Gln	Leu Thr	Val Thr	Gln	Arg Leu	Pro	
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Thr Gln	Pro Ile	Arg Thr	Trp	Ala Ala	Ser Cys	Arg	Ser Arg	Ser	
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Ser Phe	Thr Ala	Trp Arg	Arg	Asp Arg	His Ser	Arg	Gly Ala	Ile	
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Pro Val	Ala Arg	Cys Arg	Glu	Arg His	Arg His	Pro	Ala Arg	Arg	
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Arg Arg	Asp Val	Thr Ile	Thr	Ala Pro	Val Asp	Met	Arg Pro	Phe	
1100			1105			1110			
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Ala Ala	Ala Cys	Arg Pro	Gly	Val Ala	Asp Arg	Ala	Arg His	Val	
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Gly Pro	Pro Pro	Ala Arg	Leu	Val Gly	Trp Thr	Ala	Arg Phe	Leu	
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Gly Met	Val Ala	Pro Ala	Thr	Arg Trp	Thr Ser	Gly	Arg Ala	Arg	
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Lys Thr	Val Tyr Ala Phe Pro	Gly Gln Gly Ile Gln	His Lys Gly	
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Met Gly	Met Glu Val Arg Ala	Ala Pro Arg Arg Pro	Ala Arg Cys	
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Tyr Cys	Thr Trp Ser Ala Thr	Thr Arg Pro Ala Ser	Ser Pro Ala	
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Thr Gln	Val Ala Met Ala Thr	Val Ala Ala Gly Gln	Val Ala Glu	
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Met Arg	Glu Gln Gly Ala Phe	Val Glu Gly Ala Ile	Ala Cys Gly	
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His Ser	Val Gly Glu Tyr Thr	Ala Leu Ala Cys Val	Thr Gly Ile	
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Lys Met	His Asp Ile Val Pro	Arg Asp Glu Leu Gly	Arg Ser Asn	
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Tyr Arg	Leu Ser Ala Ile Arg	Pro Ser Gln Ile Asp	Leu Asp Asp	
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Ala Asp	Val Pro Ala Phe Val	Ala Gly Ile Ala Glu	Ser Thr Gly	
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Glu Phe	Leu Glu Ile Glu Asn	Phe Asn Leu Gly Gly	Ser Gln Tyr	
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Ala Ile	Ala Gly Thr Val Arg	Gly Leu Glu Ala Leu	Glu Ala Glu	
1415	1420	1425		

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Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile	
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Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg	
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Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro	
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Pro	Pro	Arg	Pro	Ala	Trp	Cys	Trp	Gly	Ser	Trp	Asp	Trp	Thr	Thr	
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Pro	Ser	Thr	Val	Ala	Gly	Arg	Pro	Asp	Ser	Glu	Leu	Ile	Asp	Leu	
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Cys	Ser	Thr	Pro	Arg	Arg	Pro	Ser	Tyr	Ser	Thr	Thr	Ala	Gly	Gln	
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Arg	Pro	Arg	Gly	Pro	Gly	Glu	Ala	Val	Ala	Asp	Arg	Arg	Lys	Asp	
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Arg	Arg	Arg	His	Arg	Arg	Arg	Leu	Ala	Ala	Leu	Ala	Glu	Arg	Phe	
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Glu	Gly	Ala	Ala	Thr	Ser	Trp	Arg	Pro	Arg	Leu	Pro	Gly	Gly	Lys	
	1955					1960					1965				
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Val	Ser	Arg	Ser	Arg	Gly	Pro	Ala	Asp	Pro	Cys	Ile	Ala	Val	Arg	
	1970					1975					1980				
ccg	cat	gcc	gcc	ggc	gcc	gag	aac	ccc	gaa	ccc	cgc	gta	cgg	cgg	5994
Pro	His	Ala	Ala	Gly	Ala	Glu	Asn	Pro	Glu	Pro	Arg	Val	Arg	Arg	
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cga	agt	tgc	cgt	ggt	gac	cgg	cgc	ttc	gaa	ggg	ttc	gat	cgc	cgc	6039
Arg	Ser	Cys	Arg	Gly	Asp	Arg	Arg	Phe	Glu	Gly	Phe	Asp	Arg	Arg	
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Val	Gly	Gly	Gly	Ser	Ala	Ala	Arg	Arg	Gly	Ala	Thr	Val	Ile	Ala	
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Thr	Thr	Ser	Lys	Leu	Asp	Glu	Glu	Arg	Leu	Arg	Phe	Tyr	Arg	Thr	
	2030					2035					2040				
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Leu	Tyr	Arg	Asp	His	Ala	Arg	Tyr	Gly	Ala	Ala	Leu	Trp	Leu	Val	
	2045					2050					2055				

gcg gcg	aac atg gcg tcc tac	tcc gac gtc gac gcc	ctg gtc gaa	6219
Ala Ala	Asn Met Ala Ser Tyr	Ser Asp Val Asp Ala	Leu Val Glu	
2060	2065	2070		
tgg atc	ggc acc gaa cag acc	gaa agc ctt ggg ccg	cag tcg att	6264
Trp Ile	Gly Thr Glu Gln Thr	Glu Ser Leu Gly Pro	Gln Ser Ile	
2075	2080	2085		
cac atc	aaa gac gcg cag acc	ccg acg ctg ctg ttc	cgt tcg cgg	6309
His Ile	Lys Asp Ala Gln Thr	Pro Thr Leu Leu Phe	Arg Ser Arg	
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Arg Thr	Arg Val Gly Thr Val	Gly Gly Arg Phe Ala	Arg Arg Asp	
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Gly Asp	Glu Ser Ala Ala Val	Ala Val Gln Arg Leu	Ile Gly Gly	
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Leu Ser	Thr Ile Gly Ala Glu	Arg Asp Met Pro Ser	Arg Leu Glu	
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Arg Gly	Ala Ala Arg Leu Ala	Gln Pro Trp His Val	Arg Arg Arg	
2150	2155	2160		
cgg gcc	cta cgg cga agc caa	gtc cgc gct gga tgc	cgt ggt gac	6534
Arg Ala	Leu Arg Arg Ser Gln	Val Arg Ala Gly Cys	Arg Gly Asp	
2165	2170	2175		
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Ala Leu	Ala Arg Arg Val Val	Leu Gly Gly Thr Gly	Gln Pro Gly	
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Ala Arg	Ala His Arg Leu Asp	Pro Arg His Arg Ala	Asp Gly Pro	
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Gln Arg	Cys His Arg Gly Arg	Arg Arg Arg Gly Arg	Gly His His	
2210	2215	2220		
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Leu Leu	Asp Arg Arg Asp Gly	Ala Ala Ala Ala Arg	Pro Val Ser	
2225	2230	2235		
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Cys Gly	Ile Gln Gly Gly Cys	Gly Arg Ser Pro Ile	Lys Ala Asp	
2240	2245	2250		
ctg acc	ggg ggc ctg ccg agg	cca acc tcg aca tgg	ccg agc tgg	6804
Leu Thr	Gly Gly Leu Pro Arg	Pro Thr Ser Thr Trp	Pro Ser Trp	
2255	2260	2265		

cgg cca agg cgc gcg agc aga	tgt cgg cag cgg cgg ccg tcg acg	6849
Arg Pro Arg Arg Ala Ser Arg	Cys Arg Gln Arg Arg Pro Ser Thr	
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Arg Thr Pro Arg Pro Leu Ala	Pro Ser Pro Arg Cys Arg Arg Arg	
2285	2295	
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Pro Gly Phe Thr Pro Ala Pro	Pro Pro Gln Trp Asp Asp Leu Asp	
2300	2310	
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Val Asp Pro Ala Asp Leu Val	Val Ile Val Gly Gly Arg Glu Ile	
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Gly Pro Tyr Gly Ser Ser Arg	Thr Arg Phe Glu Met Glu Val Glu	
2330	2340	
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Asn Glu Leu Ser Ala Ala Gly	Val Leu Glu Leu Ala Trp Thr Thr	
2345	2355	
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Gly Leu Ile Ala Gly Arg Arg	Pro Ala Thr Arg Leu Val Arg His	
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Arg Ile Arg Arg Asn Gly Arg	Arg Ile Arg Val Gly Ala Ala Leu	
2375	2385	
cac gac gcc gtg gtg cag cgc	gtc ggc att cgc gaa ttc gtt gat	7209
His Asp Ala Val Val Gln Arg	Val Gly Ile Arg Glu Phe Val Asp	
2390	2400	
gac ggc gcg atc gac ccc gac	cac gcc tcg ccg ctg ctg gtg tcg	7254
Asp Gly Ala Ile Asp Pro Asp	His Ala Ser Pro Leu Leu Val Ser	
2405	2415	
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Val Phe Leu Glu Lys Asp Phe	Ala Phe Val Val Ser Ser Glu Ala	
2420	2430	
gat gcg cgc gcc ttc gtc gag	ttc gat ccc gag cac acg gtc atc	7344
Asp Ala Arg Ala Phe Val Glu	Phe Asp Pro Glu His Thr Val Ile	
2435	2445	
cgg ccg gtg ccc gac tcc acc	gac tgg cag gtc atc cgc aag gcc	7389
Arg Pro Val Pro Asp Ser Thr	Asp Trp Gln Val Ile Arg Lys Ala	
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Gly Thr Glu Ile Arg Val Pro	Arg Lys Thr Lys Leu Ser Arg Val	
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atc agc gca gac atg gcc ggt Ile Ser Ala Asp Met Ala Gly 2495	tcc atc gac cgg ttg Ser Ile Asp Arg Leu 2500	gcg gta tgg Ala Val Trp 2505	7524
aac atg tgg cgg acc gtc gac Asn Met Trp Arg Thr Val Asp 2510	cgg ttc ctg tcc tcc Arg Phe Leu Ser Ser 2515	ggg ttc agc Gly Phe Ser 2520	7569
ccg gcc gag gtg atg cgt tac Pro Ala Glu Val Met Arg Tyr 2525	gtg cac ccg agt ttg Val His Pro Ser Leu 2530	gtg gcc aac Val Ala Asn 2535	7614
acc cag ggc acc ggc atg ggc Thr Gln Gly Thr Gly Met Gly 2540	ggc ggc acg tcc atg Gly Gly Thr Ser Met 2545	cag acg atg Gln Thr Met 2550	7659
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gcc acc gcc gcg gtg tcc gtc Ala Thr Ala Ala Val Ser Val 2600	gag gaa ggt gtc gac Glu Glu Gly Val Asp 2605	aag atc ccg Lys Ile Arg 2610	7839
ttg gga agg ctc aac tgg tgg Leu Gly Arg Leu Asn Trp Trp 2615	tcc gcg gcc gtg gat Ser Ala Ala Val Asp 2620	gac ctg acg Asp Leu Thr 2625	7884
ctg gag ggc atc atc gga ttc Leu Glu Gly Ile Ile Gly Phe 2630	ggt gac atg gcc gcc Gly Asp Met Ala Ala 2635	acc gcc gac Thr Ala Asp 2640	7929
acg tcc atg atg cgc ggc cgc Thr Ser Met Met Arg Gly Arg 2645	ggc atc cac gac tcc Gly Ile His Asp Ser 2650	aag ttt tcc Lys Phe Ser 2655	7974
cgg ccc aac gac cgc cgc cgt Arg Pro Asn Asp Arg Arg Arg 2660	ctg gct tcc tcc aag Leu Ala Ser Ser Lys 2665	ccc aag gcg Pro Lys Ala 2670	8019
gcg gga cga tcc tgt tgg gcg Ala Gly Arg Ser Cys Trp Ala 2675	cgg gga cct ggc gct Arg Gly Pro Gly Ala 2680	gcg gat ggg Ala Asp Gly 2685	8064

gct gcc ggt gct ggc ggt ggt ggg ttc gcg cag tcg ttc ggc gac Ala Ala Gly Ala Gly Gly Gly Gly Phe Ala Gln Ser Phe Gly Asp 2690 2695 2700	8109
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ggc gcg cgg cgg caa gga ttc agc tgc ggc ggg cgc tgg cca agc Gly Ala Arg Arg Gln Gly Phe Ser Cys Gly Gly Arg Trp Pro Ser 2720 2725 2730	8199
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 <211> 2796  
 <212> PRT  
 <213> Mycobacterium bovis

<400> 114

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Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His  
 35 40 45

Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu  
 50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala  
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe  
85 90 95

Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro  
100 105 110

Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr  
115 120 125

Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val  
130 135 140

Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg  
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly  
165 170 175

Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly  
180 185 190

Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp  
195 200 205

Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp  
210 215 220

Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val  
225 230 235 240

His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile  
245 250 255

Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile  
260 265 270

Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly  
275 280 285

Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val  
290 295 300

Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg  
305 310 315 320

Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr  
325 330 335

Val Asp Ala Lys Ile Val Ala Ala Ala Ala Asn Gly Arg His Trp Ala  
340 345 350

Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala  
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Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser  
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Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln  
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Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Arg Asp Arg Arg Arg  
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Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp  
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Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg  
435 440 445

Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala  
450 455 460

His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly  
465 470 475 480

Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala  
485 490 495

Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly Gly His Leu  
500 505 510

Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser  
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Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala  
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Ala Met Ala Thr Lys Glu Ser Thr Thr Ser Pro Ser Val Lys Arg Met  
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Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala  
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Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg  
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Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val  
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Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro  
610 615 620

Thr Cys Arg Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala  
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Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro  
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Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala  
660 665 670

Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro  
675 680 685

Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala  
690 695 700

Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln  
705 710 715 720

Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu  
725 730 735





His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn  
965 970 975

Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala  
980 985 990

Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu  
995 1000 1005

Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln  
1010 1015 1020

Leu Pro Thr Val Pro Ala Gln Leu Thr Val Thr Gln Arg Leu Pro  
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Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser  
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Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile  
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Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu  
1070 1075 1080

Pro Val Ala Arg Cys Arg Glu Arg His Arg His Pro Ala Arg Arg  
1085 1090 1095

Arg Arg Asp Val Thr Ile Thr Ala Pro Val Asp Met Arg Pro Phe  
1100 1105 1110

Ala Val Val Ser Gly Asp His Asn Pro Ile His Thr Asp Arg Ala  
1115 1120 1125

Ala Ala Ala Cys Arg Pro Gly Val Ala Asp Arg Ala Arg His Val  
1130 1135 1140

Ala Val Gly Arg Gly Ala Thr Arg Gly Asp Arg His Arg Arg Ala  
1145 1150 1155

Gly Pro Pro Pro Ala Arg Leu Val Gly Trp Thr Ala Arg Phe Leu  
1160 1165 1170

Gly Met	Val Ala Pro Ala Thr	Arg Trp Thr Ser Gly	Arg Ala Arg
1175	1180	1185	
Arg Ile	Asp Gln Gly Ala Glu	Ile Val Asp Val Ala	Ala Arg Val
1190	1195	1200	
Gly Ser	Asp Leu Val Met Ser	Ala Ser Ala Arg Leu	Ala Ala Pro
1205	1210	1215	
Lys Thr	Val Tyr Ala Phe Pro	Gly Gln Gly Ile Gln	His Lys Gly
1220	1225	1230	
Met Gly	Met Glu Val Arg Ala	Ala Pro Arg Arg Pro	Ala Arg Cys
1235	1240	1245	
Gly Thr	Pro Arg Thr Ser Ser	Pro Ala Thr Pro Trp	Ala Ser Arg
1250	1255	1260	
Tyr Cys	Thr Trp Ser Ala Thr	Thr Arg Pro Ala Ser	Ser Pro Ala
1265	1270	1275	
Val Cys	Thr Thr Thr Thr Asp	Gly Val Leu Tyr Leu	Thr Gln Phe
1280	1285	1290	
Thr Gln	Val Ala Met Ala Thr	Val Ala Ala Gly Gln	Val Ala Glu
1295	1300	1305	
Met Arg	Glu Gln Gly Ala Phe	Val Glu Gly Ala Ile	Ala Cys Gly
1310	1315	1320	
His Ser	Val Gly Glu Tyr Thr	Ala Leu Ala Cys Val	Thr Gly Ile
1325	1330	1335	
Tyr Gln	Leu Glu Ala Leu Leu	Glu Met Val Phe His	Arg Gly Ser
1340	1345	1350	
Lys Met	His Asp Ile Val Pro	Arg Asp Glu Leu Gly	Arg Ser Asn
1355	1360	1365	
Tyr Arg	Leu Ser Ala Ile Arg	Pro Ser Gln Ile Asp	Leu Asp Asp
1370	1375	1380	

Ala Asp Val Pro Ala Phe Val Ala Gly Ile Ala Glu Ser Thr Gly  
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Glu Phe Leu Glu Ile Glu Asn Phe Asn Leu Gly Gly Ser Gln Tyr  
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Ala Ile Ala Gly Thr Val Arg Gly Leu Glu Ala Leu Glu Ala Glu  
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Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile  
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Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg  
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Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg  
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Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro  
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Gly Ala Ala Glu Val Gln Pro Trp Thr Ala Thr Ser Ser Arg Lys  
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Ser Gly Ile Trp Cys Pro Ala Glu Pro Leu Asp Glu Ile Leu Ala  
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Asp Tyr Asp Thr Trp Leu Arg Asp Asp Arg Arg Asp Gly Ala His  
1520 1525 1530

Gly Val His Arg Ala Ala Gly Met Ala Ile Arg Gln Pro Gly Ala  
1535 1540 1545

Leu Asp Arg Asp Ala Gly Ser Ala Val His Arg Gly Gly Ala Gly  
1550 1555 1560

Gly Leu Gly Val Glu Arg Phe Val Glu Ile Gly Val Lys Ser Ser  
1565 1570 1575

Pro Thr Val Ala Gly Ser Cys His Gln His Pro Gln Thr Ala Arg  
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Ile	Arg	Pro	Gln	His	Ser	Glu	Val	Leu	Asn	Ala	Glu	Arg	Asp	Ala
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Arg	Cys	Cys	Ser	Pro	Pro	Thr	Pro	Thr	Arg	Ser	Arg	Ser	Arg	Arg
1610						1615					1620			
Lys	Thr	Ser	Arg	Ser	Arg	Asn	Arg	Pro	Arg	Arg	Thr	Ser	Ser	Arg
1625						1630					1635			
Lys	Pro	Pro	Pro	Ser	Arg	Arg	Pro	Leu	Arg	Arg	Arg	Ala	Arg	Val
1640						1645					1650			
Pro	Thr	Ile	Trp	Phe	Ser	Thr	Pro	Pro	Met	Pro	Arg	Cys	Val	Ile
1655						1660					1665			
Ala	Leu	Ser	Ala	Lys	Met	Arg	Ile	Asp	Gln	Ile	Glu	Glu	Leu	Asp
1670						1675					1680			
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1685						1690					1695			
Leu	Leu	Val	Asp	Leu	Gly	Ser	Glu	Leu	Asn	Leu	Gly	Ala	Ile	Glu
1700						1705					1710			
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1715						1720					1725			
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1730						1735					1740			
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1760						1765					1770			
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1775						1780					1785			
Pro	Ala	Arg	Ala	Ala	Ala	Phe	Ala	Ala	Ala	Pro	Trp	Ala	Thr	Cys
1790						1795					1800			

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 1805 1810 1815

Thr Arg Arg Ser His Arg Trp Pro Arg Pro Gly Arg Phe Gly Ser  
 1820 1825 1830

Ala Ala Ser Ala Gly Ser Gly Gly Ala Thr Ile Asp Ala Ala Ala  
 1835 1840 1845

Leu Ser Glu Phe Thr Asp Gln Ile Thr Gly Arg Glu Gly Val Leu  
 1850 1855 1860

Pro Pro Arg Pro Ala Trp Cys Trp Gly Ser Trp Asp Trp Thr Thr  
 1865 1870 1875

Pro Ser Thr Val Ala Gly Arg Pro Asp Ser Glu Leu Ile Asp Leu  
 1880 1885 1890

Val Thr Ala Glu Leu Gly Arg Thr Gly Arg Gly Trp Trp His Arg  
 1895 1900 1905

Cys Ser Thr Pro Arg Arg Pro Ser Tyr Ser Thr Thr Ala Gly Gln  
 1910 1915 1920

Arg Pro Arg Gly Pro Gly Glu Ala Val Ala Asp Arg Arg Lys Asp  
 1925 1930 1935

Arg Arg Arg His Arg Arg Arg Leu Ala Ala Leu Ala Glu Arg Phe  
 1940 1945 1950

Glu Gly Ala Ala Thr Ser Trp Arg Pro Arg Leu Pro Gly Gly Lys  
 1955 1960 1965

Val Ser Arg Ser Arg Gly Pro Ala Asp Pro Cys Ile Ala Val Arg  
 1970 1975 1980

Pro His Ala Ala Gly Ala Glu Asn Pro Glu Pro Arg Val Arg Arg  
 1985 1990 1995

Arg Ser Cys Arg Gly Asp Arg Arg Phe Glu Gly Phe Asp Arg Arg  
 2000 2005 2010

Val	Gly	Gly	Gly	Ser	Ala	Ala	Arg	Arg	Gly	Ala	Thr	Val	Ile	Ala
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2030						2035					2040			
Leu	Tyr	Arg	Asp	His	Ala	Arg	Tyr	Gly	Ala	Ala	Leu	Trp	Leu	Val
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Ala	Ala	Asn	Met	Ala	Ser	Tyr	Ser	Asp	Val	Asp	Ala	Leu	Val	Glu
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Trp	Ile	Gly	Thr	Glu	Gln	Thr	Glu	Ser	Leu	Gly	Pro	Gln	Ser	Ile
2075						2080					2085			
His	Ile	Lys	Asp	Ala	Gln	Thr	Pro	Thr	Leu	Leu	Phe	Arg	Ser	Arg
2090						2095					2100			
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2105						2110					2115			
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2120						2125					2130			
Leu	Ser	Thr	Ile	Gly	Ala	Glu	Arg	Asp	Met	Pro	Ser	Arg	Leu	Glu
2135						2140					2145			
Arg	Gly	Ala	Ala	Arg	Leu	Ala	Gln	Pro	Trp	His	Val	Arg	Arg	Arg
2150						2155					2160			
Arg	Ala	Leu	Arg	Arg	Ser	Gln	Val	Arg	Ala	Gly	Cys	Arg	Gly	Asp
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2180						2185					2190			
Ala	Arg	Ala	His	Arg	Leu	Asp	Pro	Arg	His	Arg	Ala	Asp	Gly	Pro
2195						2200					2205			
Gln	Arg	Cys	His	Arg	Gly	Arg	Arg	Arg	Arg	Gly	Arg	Gly	His	His
2210						2215					2220			





Asp	Ala	Arg	Ala	Phe	Val	Glu	Phe	Asp	Pro	Glu	His	Thr	Val	Ile
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Arg	Pro	Val	Pro	Asp	Ser	Thr	Asp	Trp	Gln	Val	Ile	Arg	Lys	Ala
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2465						2470					2475			
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2480						2485					2490			
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2495						2500					2505			
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2525						2530					2535			
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2570						2575					2580			
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2585						2590					2595			
Ala	Thr	Ala	Ala	Val	Ser	Val	Glu	Glu	Gly	Val	Asp	Lys	Ile	Arg
2600						2605					2610			
Leu	Gly	Arg	Leu	Asn	Trp	Trp	Ser	Ala	Ala	Val	Asp	Asp	Leu	Thr
2615						2620					2625			
Leu	Glu	Gly	Ile	Ile	Gly	Phe	Gly	Asp	Met	Ala	Ala	Thr	Ala	Asp
2630						2635					2640			

Thr Ser Met Met Arg Gly Arg Gly Ile His Asp Ser Lys Phe Ser  
 2645 2650 2655

Arg Pro Asn Asp Arg Arg Arg Leu Ala Ser Ser Lys Pro Lys Ala  
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Ala Gly Arg Ser Cys Trp Ala Arg Gly Pro Gly Ala Ala Asp Gly  
 2675 2680 2685

Ala Ala Gly Ala Gly Gly Gly Gly Phe Ala Gln Ser Phe Gly Asp  
 2690 2695 2700

Gly Val His Thr Ser Ile Arg Pro Gly Pro Gly Arg Ala Gly Gly  
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Gly Ala Arg Arg Gln Gly Phe Ser Cys Gly Gly Arg Trp Pro Ser  
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Cys Val Ala Ala Asp Asp Val Ala Val Ile Ser Lys His Asp Thr  
 2735 2740 2745

Ser Thr Leu Ala Asn Asp Pro Asn Glu Thr Glu Leu His Glu Arg  
 2750 2755 2760

Leu Ala Asp Ala Leu Gly Arg Ser Glu Gly Ala Pro Leu Phe Val  
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Val Ser Gln Lys Ser Leu Thr Gly Gln Pro Arg Ala Ala Arg Arg  
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Ser Ser Arg  
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gta gct gat ttt ggc ctg agc agg ttg atg aca ggg gac acc tac aca 96  
 Val Ala Asp Phe Gly Leu Ser Arg Leu Met Thr Gly Asp Thr Tyr Thr  
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gcc cat gct gga gcc aag ttc ccc atc aaa tgg act gca ccc gag agc 144  
 Ala His Ala Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ser  
 35 40 45

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Leu Ala Tyr Asn Lys Phe Ser Ile Lys Ser Asp Val Trp Gly Lys Gly  
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tgt acc ggc aca gac atg aag ttg cgg ctc cct gcc agt cct gag acc Cys Thr Gly Thr Asp Met Lys Leu Arg Leu Pro Ala Ser Pro Glu Thr 30 35 40	148
cac ctg gac atg ctc cgc cac ctg tac cag ggc tgt cag gta gtg cag His Leu Asp Met Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln 45 50 55 60	196
ggc aac ttg gag ctt acc tac gtg cct gcc aat gcc agc ctc tca ttc Gly Asn Leu Glu Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe 65 70 75	244
ctg cag gac atc cag gaa gtt cag ggt tac atg ctc atc gct cac aac Leu Gln Asp Ile Gln Glu Val Gln Gly Tyr Met Leu Ile Ala His Asn 80 85 90	292
cag gtg aag cgc gtc cca ctg caa agg ctg cgc atc gtg aga ggg acc Gln Val Lys Arg Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr 95 100 105	340
cag ctc ttt gag gac aag tat gcc ctg gct gtg cta gac aac cga gat Gln Leu Phe Glu Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp 110 115 120	388
cct cag gac aat gtc gcc gcc tcc acc cca ggc aga acc cca gag ggg Pro Gln Asp Asn Val Ala Ala Ser Thr Pro Gly Arg Thr Pro Glu Gly 125 130 135 140	436
ctg cgg gag ctg cag ctt cga agt ctc aca gag atc ctg aag gga gga Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly 145 150 155	484
gtt ttg atc cgt ggg aac cct cag ctc tgc tac cag gac atg gtt ttg Val Leu Ile Arg Gly Asn Pro Gln Leu Cys Tyr Gln Asp Met Val Leu 160 165 170	532
tgg aag gac gtc ttc cgc aag aat aac caa ctg gct cct gtc gat ata Trp Lys Asp Val Phe Arg Lys Asn Asn Gln Leu Ala Pro Val Asp Ile 175 180 185	580
gac acc aat cgt tcc cgg gcc tgt cca cct tgt gcc ccc gcc tgc aaa Asp Thr Asn Arg Ser Arg Ala Cys Pro Pro Cys Ala Pro Ala Cys Lys 190 195 200	628
gac aat cac tgt tgg ggt gag agt ccg gaa gac tgt cag atc ttg act Asp Asn His Cys Trp Gly Glu Ser Pro Glu Asp Cys Gln Ile Leu Thr 205 210 215 220	676
ggc acc atc tgt acc agt ggt tgt gcc cgg tgc aag ggc cgg ctg ccc Gly Thr Ile Cys Thr Ser Gly Cys Ala Arg Cys Lys Gly Arg Leu Pro 225 230 235	724



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Ser	Leu	Arg	Glu	Leu	Gly	Ser	Gly	Leu	Ala	Leu	Ile	His	Arg	Asn	Ala	
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cat	ctc	tgc	ttt	gta	cac	act	gta	cct	tgg	gac	cag	ctc	ttc	cgg	aac	1492
His	Leu	Cys	Phe	Val	His	Thr	Val	Pro	Trp	Asp	Gln	Leu	Phe	Arg	Asn	
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cca	cat	cag	gcc	ctg	ctc	cac	agt	ggg	aac	cgg	ccg	gaa	gag	gac	ttg	1540
Pro	His	Gln	Ala	Leu	Leu	His	Ser	Gly	Asn	Arg	Pro	Glu	Glu	Asp	Leu	
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Cys	Val	Ser	Ser	Gly	Leu	Val	Cys	Asn	Ser	Leu	Cys	Ala	His	Gly	His	
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tgc	tgg	ggg	cca	ggg	ccc	acc	cag	tgt	gtc	aac	tgc	agt	cat	ttc	ctt	1636
Cys	Trp	Gly	Pro	Gly	Pro	Thr	Gln	Cys	Val	Asn	Cys	Ser	His	Phe	Leu	
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cgg	ggc	cag	gag	tgt	gtg	gag	gag	tgc	cga	gta	tgg	aag	ggg	ctc	ccc	1684
Arg	Gly	Gln	Glu	Cys	Val	Glu	Glu	Cys	Arg	Val	Trp	Lys	Gly	Leu	Pro	
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cgg	gag	tat	gtg	agt	gac	aag	cgc	tgt	ctg	ccg	tgt	cac	ccc	gag	tgt	1732
Arg	Glu	Tyr	Val	Ser	Asp	Lys	Arg	Cys	Leu	Pro	Cys	His	Pro	Glu	Cys	
			560					565					570			
cag	cct	caa	aac	agc	tca	gag	acc	tgc	ttt	gga	tcg	gag	gct	gat	cag	1780
Gln	Pro	Gln	Asn	Ser	Ser	Glu	Thr	Cys	Phe	Gly	Ser	Glu	Ala	Asp	Gln	
		575					580					585				
tgt	gca	gcc	tgc	gcc	cac	tac	aag	gac	tcg	tcc	tcc	tgt	gtg	gct	cgc	1828
Cys	Ala	Ala	Cys	Ala	His	Tyr	Lys	Asp	Ser	Ser	Ser	Cys	Val	Ala	Arg	
	590					595					600					
tgc	ccc	agt	ggt	gtg	aaa	ccg	gac	ctc	tcc	tac	atg	ccc	atc	tgg	aag	1876
Cys	Pro	Ser	Gly	Val	Lys	Pro	Asp	Leu	Ser	Tyr	Met	Pro	Ile	Trp	Lys	
605					610					615					620	
tac	ccg	gat	gag	gag	ggc	ata	tgc	cag	ccg	tgc	ccc	atc	aac	tgc	acc	1924
Tyr	Pro	Asp	Glu	Glu	Gly	Ile	Cys	Gln	Pro	Cys	Pro	Ile	Asn	Cys	Thr	
				625					630					635		
cac	tcc	tgt	gtg	gat	ctg	gat	gaa	cga	ggc	tgc	cca	gca	gag	cag	aga	1972
His	Ser	Cys	Val	Asp	Leu	Asp	Glu	Arg	Gly	Cys	Pro	Ala	Glu	Gln	Arg	
			640					645					650			
gcc	agc	ccg	gtg	aca	ttc	atc	att	gca	act	gta	gag	ggc	gtc	ctg	ctg	2020
Ala	Ser	Pro	Val	Thr	Phe	Ile	Ile	Ala	Thr	Val	Glu	Gly	Val	Leu	Leu	
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ttc	ctg	atc	tta	gtg	gtg	gtc	gtt	gga	atc	cta	atc	aaa	cga	agg	aga	2068
Phe	Leu	Ile	Leu	Val	Val	Val	Val	Gly	Ile	Leu	Ile	Lys	Arg	Arg	Arg	
	670					675					680					

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Gln	Lys	Ile	Arg	Lys	Tyr	Thr	Met	Arg	Arg	Leu	Leu	Gln	Glu	Thr	Glu	
685					690					695					700	
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Leu	Val	Glu	Pro	Leu	Thr	Pro	Ser	Gly	Ala	Met	Pro	Asn	Gln	Ala	Gln	
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atg	cgg	atc	cta	aaa	gag	acg	gag	cta	agg	aag	gtg	aag	gtg	ctt	gga	2212
Met	Arg	Ile	Leu	Lys	Glu	Thr	Glu	Leu	Arg	Lys	Val	Lys	Val	Leu	Gly	
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tca	gga	gct	ttt	ggc	act	gtc	tac	aag	ggc	atc	tgg	atc	cca	gat	ggg	2260
Ser	Gly	Ala	Phe	Gly	Thr	Val	Tyr	Lys	Gly	Ile	Trp	Ile	Pro	Asp	Gly	
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gag	aat	gtg	aaa	atc	ccc	gtg	gct	atc	aag	gtg	ttg	aga	gaa	aac	aca	2308
Glu	Asn	Val	Lys	Ile	Pro	Val	Ala	Ile	Lys	Val	Leu	Arg	Glu	Asn	Thr	
		750				755					760					
tct	cct	aaa	gcc	aac	aaa	gaa	att	cta	gat	gaa	gcg	tat	gtg	atg	gct	2356
Ser	Pro	Lys	Ala	Asn	Lys	Glu	Ile	Leu	Asp	Glu	Ala	Tyr	Val	Met	Ala	
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ggt	gtg	ggt	tct	ccg	tat	gtg	tcc	cgc	ctc	ctg	ggc	atc	tgc	ctg	aca	2404
Gly	Val	Gly	Ser	Pro	Tyr	Val	Ser	Arg	Leu	Leu	Gly	Ile	Cys	Leu	Thr	
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Ser	Thr	Val	Gln	Leu	Val	Thr	Gln	Leu	Met	Pro	Tyr	Gly	Cys	Leu	Leu	
			800					805					810			
gac	cat	gtc	cga	gaa	cac	cga	ggt	cgc	cta	ggc	tcc	cag	gac	ctg	ctc	2500
Asp	His	Val	Arg	Glu	His	Arg	Gly	Arg	Leu	Gly	Ser	Gln	Asp	Leu	Leu	
		815					820					825				
aac	tgg	tgt	gtt	cag	att	gcc	aag	ggg	atg	agc	tac	ctg	gag	gac	gtg	2548
Asn	Trp	Cys	Val	Gln	Ile	Ala	Lys	Gly	Met	Ser	Tyr	Leu	Glu	Asp	Val	
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Arg	Leu	Val	His	Arg	Asp	Leu	Ala	Ala	Arg	Asn	Val	Leu	Val	Lys	Ser	
845					850					855					860	
ccc	aac	cac	gtc	aag	att	aca	gat	ttc	ggg	ctg	gct	cgg	ctg	ctg	gac	2644
Pro	Asn	His	Val	Lys	Ile	Thr	Asp	Phe	Gly	Leu	Ala	Arg	Leu	Leu	Asp	
				865					870					875		
att	gat	gag	aca	gag	tac	cat	gca	gat	ggg	ggc	aag	gtg	ccc	atc	aaa	2692
Ile	Asp	Glu	Thr	Glu	Tyr	His	Ala	Asp	Gly	Gly	Lys	Val	Pro	Ile	Lys	
			880					885					890			
tgg	atg	gca	ttg	gaa	tct	att	ctc	aga	cgc	cgg	ttc	acc	cat	cag	agt	2740
Trp	Met	Ala	Leu	Glu	Ser	Ile	Leu	Arg	Arg	Arg	Phe	Thr	His	Gln	Ser	
		895					900					905				

gat gtg tgg agc tat gga gtg act gtg tgg gag ctg atg act ttt ggg	2788
Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly	
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gcc aaa cct tac gat gga atc cca gcc cgg gag atc cct gat ttg ctg	2836
Ala Lys Pro Tyr Asp Gly Ile Pro Ala Arg Glu Ile Pro Asp Leu Leu	
925 930 935 940	
gag aag gga gaa cgc cta cct cag cct cca atc tgc acc att gat gtc	2884
Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val	
945 950 955	
tac atg att atg gtc aaa tgt tgg atg att gac tct gaa tgt cgc ccg	2932
Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ser Glu Cys Arg Pro	
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aga ttc cgg gag ttg gtg tca gaa ttt tca cgt atg gcg agg gac ccc	2980
Arg Phe Arg Glu Leu Val Ser Glu Phe Ser Arg Met Ala Arg Asp Pro	
975 980 985	
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Gln Arg Phe Val Val Ile Gln Asn Glu Asp Leu Gly Pro Ser Ser Pro	
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Met Asp Ser Thr Phe Tyr Arg Ser Leu Leu Glu Asp Asp Asp Met	
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Gly Asp Leu Val Asp Ala Glu Glu Tyr Leu Val Pro Gln Gln Gly	
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Phe Phe Ser Pro Asp Pro Thr Pro Gly Thr Gly Ser Thr Ala His	
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Arg Arg His Arg Ser Ser Ser Thr Arg Ser Gly Gly Gly Glu Leu	
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Thr Leu Gly Leu Glu Pro Ser Glu Glu Gly Pro Pro Arg Ser Pro	
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Leu Ala Pro Ser Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp	
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Asp Leu Ser Pro Leu Gln Arg Tyr Ser Glu Asp Pro Thr Leu Pro	
1110 1115 1120	



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ccc	cag	ccc	gag	tat	gtg	aac	caa	tca	gag	gtt	cag	cct	cag	cct	3478
Pro	Gln	Pro	Glu	Tyr	Val	Asn	Gln	Ser	Glu	Val	Gln	Pro	Gln	Pro	
1140					1145					1150					
cct	tta	acc	cca	gag	ggt	cct	ctg	cct	cct	gtc	cgg	cct	gct	ggt	3523
Pro	Leu	Thr	Pro	Glu	Gly	Pro	Leu	Pro	Pro	Val	Arg	Pro	Ala	Gly	
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gct	act	cta	gaa	aga	ccc	aag	act	ctc	tct	cct	ggg	aag	aat	ggg	3568
Ala	Thr	Leu	Glu	Arg	Pro	Lys	Thr	Leu	Ser	Pro	Gly	Lys	Asn	Gly	
1170					1175					1180					
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Val	Val	Lys	Asp	Val	Phe	Ala	Phe	Gly	Gly	Ala	Val	Glu	Asn	Pro	
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Ser	Pro	Ala	Phe	Ser	Pro	Ala	Phe	Asp	Asn	Leu	Tyr	Tyr	Trp	Asp	
1215					1220					1225					
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Gln	Asn	Ser	Ser	Glu	Gln	Gly	Pro	Pro	Pro	Ser	Asn	Phe	Glu	Gly	
1230					1235					1240					
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Thr	Pro	Thr	Ala	Glu	Asn	Pro	Glu	Tyr	Leu	Gly	Leu	Asp	Val	Pro	
1245					1250					1255					
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Val															
1260															
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<400> 118

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465 470 475 480

Val His Thr Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala  
485 490 495

Leu Leu His Ser Gly Asn Arg Pro Glu Glu Asp Leu Cys Val Ser Ser  
500 505 510

Gly Leu Val Cys Asn Ser Leu Cys Ala His Gly His Cys Trp Gly Pro  
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Gly Pro Thr Gln Cys Val Asn Cys Ser His Phe Leu Arg Gly Gln Glu  
530 535 540

Cys Val Glu Glu Cys Arg Val Trp Lys Gly Leu Pro Arg Glu Tyr Val  
545 550 555 560

Ser Asp Lys Arg Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn  
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Ser Ser Glu Thr Cys Phe Gly Ser Glu Ala Asp Gln Cys Ala Ala Cys  
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Ala His Tyr Lys Asp Ser Ser Ser Cys Val Ala Arg Cys Pro Ser Gly  
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Val Lys Pro Asp Leu Ser Tyr Met Pro Ile Trp Lys Tyr Pro Asp Glu  
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Glu Gly Ile Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val  
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Asp Leu Asp Glu Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val  
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Thr Phe Ile Ile Ala Thr Val Glu Gly Val Leu Leu Phe Leu Ile Leu  
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Val Val Val Val Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg  
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Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr  
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Asp Gly Ile Pro Ala Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu  
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Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met  
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Val Lys Cys Trp Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu  
 965 970 975

Leu Val Ser Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val  
 980 985 990

Val Ile Gln Asn Glu Asp Leu Gly Pro Ser Ser Pro Met Asp Ser Thr  
 995 1000 1005

Phe Tyr Arg Ser Leu Leu Glu Asp Asp Asp Met Gly Asp Leu Val  
 1010 1015 1020

Asp Ala Glu Glu Tyr Leu Val Pro Gln Gln Gly Phe Phe Ser Pro  
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Asp Pro Thr Pro Gly Thr Gly Ser Thr Ala His Arg Arg His Arg  
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Ser Ser Ser Thr Arg Ser Gly Gly Gly Glu Leu Thr Leu Gly Leu  
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Glu Pro Ser Glu Glu Gly Pro Pro Arg Ser Pro Leu Ala Pro Ser  
 1070 1075 1080

Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp Leu Ala Met Gly  
 1085 1090 1095

Val Thr Lys Gly Leu Gln Ser Leu Ser Pro His Asp Leu Ser Pro  
 1100 1105 1110

Leu Gln Arg Tyr Ser Glu Asp Pro Thr Leu Pro Leu Pro Pro Glu  
 1115 1120 1125



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gac tac cgc agc tac cgc ttc ccc aag ctc acg gtc att acc gag tac Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val Ile Thr Glu Tyr 70 75 80	297
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ccc aac ctc acg gtc atc cgc ggc tgg aaa ctc ttc tac aac tac gcc Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe Tyr Asn Tyr Ala 105 110 115	393
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ctg agg aac att act cgg ggg gcc atc agg att gag aaa aat gct gac Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu Lys Asn Ala Asp 135 140 145	489
ctc tgt tac ctc tcc act gtg gac tgg tcc ctg atc ctg gat gcg gtg Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile Leu Asp Ala Val 150 155 160	537
tcc aat aac tac att gtg ggg aat aag ccc cca aag gaa tgt ggg gac Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys Glu Cys Gly Asp 165 170 175 180	585
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Val	Asp	Arg	Asp	Phe	Cys	Ala	Asn	Ile	Leu	Ser	Ala	Glu	Ser	Ser	Asp		
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Glu	Gly	Pro	Cys	Pro	Lys	Val	Cys	Glu	Glu	Glu	Lys	Lys	Thr	Lys	Thr		
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Ile	Asp	Ser	Val	Thr	Ser	Ala	Gln	Met	Leu	Gln	Gly	Cys	Thr	Ile	Phe		
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Lys	Gly	Asn	Leu	Leu	Ile	Asn	Ile	Arg	Arg	Gly	Asn	Asn	Ile	Ala	Ser		
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Lys	Ile	Arg	His	Ser	His	Ala	Leu	Val	Ser	Leu	Ser	Phe	Leu	Lys	Asn		
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Leu	Arg	Leu	Ile	Leu	Gly	Glu	Glu	Gln	Leu	Glu	Gly	Asn	Tyr	Ser	Phe		
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Tyr	Val	Leu	Asp	Asn	Gln	Asn	Leu	Gln	Gln	Leu	Trp	Asp	Trp	Asp	His		
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Arg	Asn	Leu	Thr														

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Phe	Leu	His	Asn	Ser	Ile	Phe	Val	Pro	Arg	Pro	Glu	Arg	Lys	Arg	Arg	
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Thr	Thr	Ala	Ala	Asp	Thr	Tyr	Asn	Ile	Thr	Asp	Pro	Glu	Glu	Leu	Glu	
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Thr	Glu	Tyr	Pro	Phe	Phe	Glu	Ser	Arg	Val	Asp	Asn	Lys	Glu	Arg	Thr	
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Val	Phe	Ala	Arg	Thr	Met	Pro	Ala	Glu	Gly	Ala	Asp	Asp	Ile	Pro	Gly	
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Gly Gly Leu Val Ile Met Leu Tyr Val Phe His Arg Lys Arg Asn Asn	
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Ser Arg Leu Gly Asn Gly Val Leu Tyr Ala Ser Val Asn Pro Glu Tyr	
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Leu Glu Asn Cys Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile  
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Ser Lys Ala Glu Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val  
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Gly Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe  
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Tyr Asn Tyr Ala Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile  
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Gly Leu Tyr Asn Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu  
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Lys Asn Ala Asp Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile  
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Leu Asp Ala Val Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys  
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Glu Lys Thr Thr Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr  
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Asn Arg Cys Gln Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys  
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Ala Gly Val Cys Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu  
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Gly Trp Arg Cys Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala  
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Gln Glu Cys Pro Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr  
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Lys Glu Arg Thr Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg  
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Ile Asp Ile His Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser  
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Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser Cys Val Pro Leu  
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Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln His Asn Lys Cys  
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Gln Tyr Val Arg Ile Lys Asn Trp Gly Ser Gly Glu Ile Leu His Asp  
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Leu	Trp	Asn	Ser	Gln	Leu	Ile	Arg	Tyr	Ala	Gly	Tyr	Gln	Met	Pro	Asp	
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ctg</																



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Phe	Gln	Glu	Leu	Gly	Leu	Lys	Trp	Tyr	Ala	Leu	Pro	Ala	Val	Ala	Asn	
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His	Ile	Trp	Gln	Asn	Glu	Lys	Leu	Arg	Pro	Arg	Arg	Arg	Glu	Ile	Arg	
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Phe	Arg	Val	Leu	Val	Lys	Val	Val	Phe	Phe	Ala	Ser	Met	Leu	Met	Arg	
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Lys Ala Thr Ser Asp Phe Thr Cys Lys Ser Lys Ser Cys Leu Gly Ser  
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gaa ctg Glu Leu 1005	agg cct aca gga gag Arg Pro Thr Gly Glu 1010	att gag cag tat tct Ile Glu Gln Tyr Ser 1015	gtc agc gca Val Ser Ala	3132
acc tat Thr Tyr 1020	gag ctc cag aga gag Glu Leu Gln Arg Glu 1025	gac aga gcc ttg gtg Asp Arg Ala Leu Val 1030	gat acc ctg Asp Thr Leu	3177
aag ttt Lys Phe 1035	gta act caa gca gaa Val Thr Gln Ala Glu 1040	ggc ggc aag cag act Gly Ala Lys Gln Thr 1045	gag gct acc Glu Ala Thr	3222
atg aca Met Thr 1050	ttc aaa tat aat cgg Phe Lys Tyr Asn Arg 1055	cag agt atg acc ttg Gln Ser Met Thr Leu 1060	tcc agt gaa Ser Ser Glu	3267
gtc caa Val Gln 1065	att ccg gat ttt gat Ile Pro Asp Phe Asp 1070	gtt gac ctc gga aca Val Asp Leu Gly Thr 1075	atc ctc aga Ile Leu Arg	3312
gtt aat Val Asn 1080	gat gaa tct act gag Asp Glu Ser Thr Glu 1085	ggc aaa acg tct tac Gly Lys Thr Ser Tyr 1090	aga ctc acc Arg Leu Thr	3357
ctg gac Leu Asp 1095	att cag aac aag aaa Ile Gln Asn Lys Lys 1100	att act gag gtc gcc Ile Thr Glu Val Ala 1105	ctc atg ggc Leu Met Gly	3402
cac cta His Leu 1110	agt tgt gac aca aag Ser Cys Asp Thr Lys 1115	gaa gaa aga aaa atc Glu Glu Arg Lys Ile 1120	aag ggt gtt Lys Gly Val	3447
att tcc Ile Ser 1125	ata ccc cgt ttg caa Ile Pro Arg Leu Gln 1130	gca gaa gcc aga agt Ala Glu Ala Arg Ser 1135	gag atc ctc Glu Ile Leu	3492
gcc cac Ala His 1140	tgg tcg cct gcc aaa Trp Ser Pro Ala Lys 1145	ctg ctt ctc caa atg Leu Leu Leu Gln Met 1150	gac tca tct Asp Ser Ser	3537
gct aca Ala Thr 1155	gct tat ggc tcc aca Ala Tyr Gly Ser Thr 1160	gtt tcc aag agg gtg Val Ser Lys Arg Val 1165	gca tgg cat Ala Trp His	3582
tat gat Tyr Asp 1170	gaa gag aag att gaa Glu Glu Lys Ile Glu 1175	ttt gaa tgg aac aca Phe Glu Trp Asn Thr 1180	ggc acc aat Gly Thr Asn	3627
gta gat Val Asp 1185	acc aaa aaa atg act Thr Lys Lys Met Thr 1190	tcc aat ttc cct gtg Ser Asn Phe Pro Val 1195	gat ctc tcc Asp Leu Ser	3672
gat tat Asp Tyr 1200	cct aag agc ttg cat Pro Lys Ser Leu His 1205	atg tat gct aat aga Met Tyr Ala Asn Arg 1210	ctc ctg gat Leu Leu Asp	3717

cac aga gtc cct caa aca gac atg act ttc cgg cac gtg ggt tcc His Arg Val Pro Gln Thr Asp Met Thr Phe Arg His Val Gly Ser 1215 1220 1225	3762
aaa tta ata gtt gca atg agc tca tgg ctt cag aag gca tct ggg Lys Leu Ile Val Ala Met Ser Ser Trp Leu Gln Lys Ala Ser Gly 1230 1235 1240	3807
agt ctt cct tat acc cag act ttg caa gac cac ctc aat agc ctg Ser Leu Pro Tyr Thr Gln Thr Leu Gln Asp His Leu Asn Ser Leu 1245 1250 1255	3852
aag gag ttc aac ctc cag aac atg gga ttg cca gac ttc cac atc Lys Glu Phe Asn Leu Gln Asn Met Gly Leu Pro Asp Phe His Ile 1260 1265 1270	3897
cca gaa aac ctc ttc tta aaa agc gat ggc cgg gtc aaa tat acc Pro Glu Asn Leu Phe Leu Lys Ser Asp Gly Arg Val Lys Tyr Thr 1275 1280 1285	3942
ttg aac aag aac agt ttg aaa att gag att cct ttg cct ttt ggt Leu Asn Lys Asn Ser Leu Lys Ile Glu Ile Pro Leu Pro Phe Gly 1290 1295 1300	3987
ggc aaa tcc tcc aga gat cta aag atg tta gag act gtt agg aca Gly Lys Ser Ser Arg Asp Leu Lys Met Leu Glu Thr Val Arg Thr 1305 1310 1315	4032
cca gcc ctc cac ttc aag tct gtg gga ttc cat ctg cca tct cga Pro Ala Leu His Phe Lys Ser Val Gly Phe His Leu Pro Ser Arg 1320 1325 1330	4077
gag ttc caa gtc cct act ttt acc att ccc aag ttg tat caa ctg Glu Phe Gln Val Pro Thr Phe Thr Ile Pro Lys Leu Tyr Gln Leu 1335 1340 1345	4122
caa gtg cct ctc ctg ggt gtt cta gac ctc tcc acg aat gtc tac Gln Val Pro Leu Leu Gly Val Leu Asp Leu Ser Thr Asn Val Tyr 1350 1355 1360	4167
agc aac ttg tac aac tgg tcc gcc tcc tac agt ggt ggc aac acc Ser Asn Leu Tyr Asn Trp Ser Ala Ser Tyr Ser Gly Gly Asn Thr 1365 1370 1375	4212
agc aca gac cat ttc agc ctt cgg gct cgt tac cac atg aag gct Ser Thr Asp His Phe Ser Leu Arg Ala Arg Tyr His Met Lys Ala 1380 1385 1390	4257
gac tct gtg gtt gac ctg ctt tcc tac aat gtg caa gga tct gga Asp Ser Val Val Asp Leu Leu Ser Tyr Asn Val Gln Gly Ser Gly 1395 1400 1405	4302
gaa aca aca tat gac cac aag aat acg ttc aca cta tca tgt gat Glu Thr Thr Tyr Asp His Lys Asn Thr Phe Thr Leu Ser Cys Asp 1410 1415 1420	4347

ggg tct cta cgc cac aaa ttt	cta gat tcg aat atc	aaa ttc agt	4392
Gly Ser Leu Arg His Lys Phe	Leu Asp Ser Asn Ile	Lys Phe Ser	
1425	1430	1435	
cat gta gaa aaa ctt gga aac	aac cca gtc tca aaa	ggg tta cta	4437
His Val Glu Lys Leu Gly Asn	Asn Pro Val Ser Lys	Gly Leu Leu	
1440	1445	1450	
ata ttc gat gca tct agt tcc	tgg gga cca cag atg	tct gct tca	4482
Ile Phe Asp Ala Ser Ser Ser	Trp Gly Pro Gln Met	Ser Ala Ser	
1455	1460	1465	
gtt cat ttg gac tcc aaa aag	aaa cag cat ttg ttt	gtc aaa gaa	4527
Val His Leu Asp Ser Lys Lys	Lys Gln His Leu Phe	Val Lys Glu	
1470	1475	1480	
gtc aag att gat ggg cag ttc	aga gtc tct tcg ttc	tat gct aaa	4572
Val Lys Ile Asp Gly Gln Phe	Arg Val Ser Ser Phe	Tyr Ala Lys	
1485	1490	1495	
ggc aca tat ggc ctg tct tgt	cag agg gat cct aac	act ggc cgg	4617
Gly Thr Tyr Gly Leu Ser Cys	Gln Arg Asp Pro Asn	Thr Gly Arg	
1500	1505	1510	
ctc aat gga gag tcc aac ctg	agg ttt aac tcc tcc	tac ctc caa	4662
Leu Asn Gly Glu Ser Asn Leu	Arg Phe Asn Ser Ser	Tyr Leu Gln	
1515	1520	1525	
ggc acc aac cag ata aca gga	aga tat gaa gat gga	acc ctc tcc	4707
Gly Thr Asn Gln Ile Thr Gly	Arg Tyr Glu Asp Gly	Thr Leu Ser	
1530	1535	1540	
ctc acc tcc acc tct gat ctg	caa agt ggc atc att	aaa aat act	4752
Leu Thr Ser Thr Ser Asp Leu	Gln Ser Gly Ile Ile	Lys Asn Thr	
1545	1550	1555	
gct tcc cta aag tat gag aac	tac gag ctg act tta	aaa tct gac	4797
Ala Ser Leu Lys Tyr Glu Asn	Tyr Glu Leu Thr Leu	Lys Ser Asp	
1560	1565	1570	
acc aat ggg aag tat aag aac	ttt gcc act tct aac	aag atg gat	4842
Thr Asn Gly Lys Tyr Lys Asn	Phe Ala Thr Ser Asn	Lys Met Asp	
1575	1580	1585	
atg acc ttc tct aag caa aat	gca ctg ctg cgt tct	gaa tat cag	4887
Met Thr Phe Ser Lys Gln Asn	Ala Leu Leu Arg Ser	Glu Tyr Gln	
1590	1595	1600	
gct gat tac gag tca ttg agg	ttc ttc agc ctg ctt	tct gga tca	4932
Ala Asp Tyr Glu Ser Leu Arg	Phe Phe Ser Leu Leu	Ser Gly Ser	
1605	1610	1615	
cta aat tcc cat ggt ctt gag	tta aat gct gac atc	tta ggc act	4977
Leu Asn Ser His Gly Leu Glu	Leu Asn Ala Asp Ile	Leu Gly Thr	
1620	1625	1630	



gac aaa att aat agt ggt gct	cac aag gcg aca cta	agg att ggc	5022
Asp Lys Ile Asn Ser Gly Ala	His Lys Ala Thr Leu	Arg Ile Gly	
1635	1640	1645	
caa gat gga ata tct acc agt	gca acg acc aac ttg	aag tgt agt	5067
Gln Asp Gly Ile Ser Thr Ser	Ala Thr Thr Asn Leu	Lys Cys Ser	
1650	1655	1660	
ctc ctg gtg ctg gag aat gag	ctg aat gca gag ctt	ggc ctc tct	5112
Leu Leu Val Leu Glu Asn Glu	Leu Asn Ala Glu Leu	Gly Leu Ser	
1665	1670	1675	
ggg gca tct atg aaa tta aca	aca aat ggc cgc ttc	agg gaa cac	5157
Gly Ala Ser Met Lys Leu Thr	Thr Asn Gly Arg Phe	Arg Glu His	
1680	1685	1690	
aat gca aaa ttc agt ctg gat	ggg aaa gcc gcc ctc	aca gag cta	5202
Asn Ala Lys Phe Ser Leu Asp	Gly Lys Ala Ala Leu	Thr Glu Leu	
1695	1700	1705	
tca ctg gga agt gct tat cag	gcc atg att ctg ggt	gtc gac agc	5247
Ser Leu Gly Ser Ala Tyr Gln	Ala Met Ile Leu Gly	Val Asp Ser	
1710	1715	1720	
aaa aac att ttc aac ttc aag	gtc agt caa gaa gga	ctt aag ctc	5292
Lys Asn Ile Phe Asn Phe Lys	Val Ser Gln Glu Gly	Leu Lys Leu	
1725	1730	1735	
tca aat gac atg atg ggc tca	tat gct gaa atg aaa	ttt gac cac	5337
Ser Asn Asp Met Met Gly Ser	Tyr Ala Glu Met Lys	Phe Asp His	
1740	1745	1750	
aca aac agt ctg aac att gca	ggc tta tca ctg gac	ttc tct tca	5382
Thr Asn Ser Leu Asn Ile Ala	Gly Leu Ser Leu Asp	Phe Ser Ser	
1755	1760	1765	
aaa ctt gac aac att tac agc	tct gac aag ttt tat	aag caa act	5427
Lys Leu Asp Asn Ile Tyr Ser	Ser Asp Lys Phe Tyr	Lys Gln Thr	
1770	1775	1780	
gtt aat tta cag cta cag ccc	tat tct ctg gta act	act tta aac	5472
Val Asn Leu Gln Leu Gln Pro	Tyr Ser Leu Val Thr	Thr Leu Asn	
1785	1790	1795	
agt gac ctg aaa tac aat gct	ctg gat ctc acc aac	aat ggg aaa	5517
Ser Asp Leu Lys Tyr Asn Ala	Leu Asp Leu Thr Asn	Asn Gly Lys	
1800	1805	1810	
cta cgg cta gaa ccc ctg aag	ctg cat gtg gct ggt	aac cta aaa	5562
Leu Arg Leu Glu Pro Leu Lys	Leu His Val Ala Gly	Asn Leu Lys	
1815	1820	1825	
gga gcc tac caa aat aat gaa	ata aaa cac atc tat	gcc atc tct	5607
Gly Ala Tyr Gln Asn Asn Glu	Ile Lys His Ile Tyr	Ala Ile Ser	
1830	1835	1840	

tct gct gcc tta tca gca agc Ser Ala Ala Leu Ser Ala Ser 1845	tat aaa gca gac act Tyr Lys Ala Asp Thr 1850	ggt gct aag Val Ala Lys 1855	5652
ggt cag ggt gtg gag ttt agc Val Gln Gly Val Glu Phe Ser 1860	cat cgg ctc aac aca His Arg Leu Asn Thr 1865	gac atc gct Asp Ile Ala 1870	5697
ggg ctg gct tca gcc att gac Gly Leu Ala Ser Ala Ile Asp 1875	atg agc aca aac tat Met Ser Thr Asn Tyr 1880	aat tca gac Asn Ser Asp 1885	5742
tca ctg cat ttc agc aat gtc Ser Leu His Phe Ser Asn Val 1890	ttc cgt tct gta atg Phe Arg Ser Val Met 1895	gcc ccg ttt Ala Pro Phe 1900	5787
acc atg acc atc gat gca cat Thr Met Thr Ile Asp Ala His 1905	aca aat ggc aat ggg Thr Asn Gly Asn Gly 1910	aaa ctc gct Lys Leu Ala 1915	5832
ctc tgg gga gaa cat act ggg Leu Trp Gly Glu His Thr Gly 1920	cag ctg tat agc aaa Gln Leu Tyr Ser Lys 1925	ttc ctg ttg Phe Leu Leu 1930	5877
aaa gca gaa cct ctg gca ttt Lys Ala Glu Pro Leu Ala Phe 1935	act ttc tct cat gat Thr Phe Ser His Asp 1940	tac aaa ggc Tyr Lys Gly 1945	5922
tcc aca agt cat cat ctc gtg Ser Thr Ser His His Leu Val 1950	tct agg aaa agc atc Ser Arg Lys Ser Ile 1955	agt gca gct Ser Ala Ala 1960	5967
ctt gaa cac aaa gtc agt gcc Leu Glu His Lys Val Ser Ala 1965	ctg ctt act cca gct Leu Leu Thr Pro Ala 1970	gag cag aca Glu Gln Thr 1975	6012
ggc acc tgg aaa ctc aag acc Gly Thr Trp Lys Leu Lys Thr 1980	caa ttt aac aac aat Gln Phe Asn Asn Asn 1985	gaa tac agc Glu Tyr Ser 1990	6057
cag gac ttg gat gct tac aac Gln Asp Leu Asp Ala Tyr Asn 1995	act aaa gat aaa att Thr Lys Asp Lys Ile 2000	ggc gtg gag Gly Val Glu 2005	6102
ctt act gga cga act ctg gct Leu Thr Gly Arg Thr Leu Ala 2010	gac cta act cta cta Asp Leu Thr Leu Leu 2015	gac tcc cca Asp Ser Pro 2020	6147
att aaa gtg cca ctt tta ctc Ile Lys Val Pro Leu Leu Leu 2025	agt gag ccc atc aat Ser Glu Pro Ile Asn 2030	atc att gat Ile Ile Asp 2035	6192
gct tta gag atg aga gat gcc Ala Leu Glu Met Arg Asp Ala 2040	gtt gag aag ccc caa Val Glu Lys Pro Gln 2045	gaa ttt aca Glu Phe Thr 2050	6237

gaa aaa	ctg cag cag ctt aag	aga cac ata cag aat	ata gac atc	6912
Glu Lys	Leu Gln Gln Leu Lys	Arg His Ile Gln Asn	Ile Asp Ile	
2265	2270	2275		
cag cac	cta gct gga aag tta	aaa caa cac att gag	gct att gat	6957
Gln His	Leu Ala Gly Lys Leu	Lys Gln His Ile Glu	Ala Ile Asp	
2280	2285	2290		
gtt aga	gtg ctt tta gat caa	ttg gga act aca att	tca ttt gaa	7002
Val Arg	Val Leu Leu Asp Gln	Leu Gly Thr Thr Ile	Ser Phe Glu	
2295	2300	2305		
aga ata	aat gat gtt ctt gag	cat gtc aaa cac ttt	gtt ata aat	7047
Arg Ile	Asn Asp Val Leu Glu	His Val Lys His Phe	Val Ile Asn	
2310	2315	2320		
ctt att	ggg gat ttt gaa gta	gct gag aaa atc aat	gcc ttc aga	7092
Leu Ile	Gly Asp Phe Glu Val	Ala Glu Lys Ile Asn	Ala Phe Arg	
2325	2330	2335		
gcc aaa	gtc cat gag tta atc	gag agg tat gaa gta	gac caa caa	7137
Ala Lys	Val His Glu Leu Ile	Glu Arg Tyr Glu Val	Asp Gln Gln	
2340	2345	2350		
atc cag	gtt tta atg gat aaa	tta gta gag ttg gcc	cac caa tac	7182
Ile Gln	Val Leu Met Asp Lys	Leu Val Glu Leu Ala	His Gln Tyr	
2355	2360	2365		
aag ttg	aag gag act att cag	aag cta agc aat gtc	cta caa caa	7227
Lys Leu	Lys Glu Thr Ile Gln	Lys Leu Ser Asn Val	Leu Gln Gln	
2370	2375	2380		
gtt aag	ata aaa gat tac ttt	gag aaa ttg gtt gga	ttt att gat	7272
Val Lys	Ile Lys Asp Tyr Phe	Glu Lys Leu Val Gly	Phe Ile Asp	
2385	2390	2395		
gat gct	gtc aag aag ctt aat	gaa tta tct ttt aaa	aca ttc att	7317
Asp Ala	Val Lys Lys Leu Asn	Glu Leu Ser Phe Lys	Thr Phe Ile	
2400	2405	2410		
gaa gat	gtt aac aaa ttc ctt	gac atg ttg ata aag	aaa tta aag	7362
Glu Asp	Val Asn Lys Phe Leu	Asp Met Leu Ile Lys	Lys Leu Lys	
2415	2420	2425		
tca ttt	gat tac cac cag ttt	gta gat gaa acc aat	gac aaa atc	7407
Ser Phe	Asp Tyr His Gln Phe	Val Asp Glu Thr Asn	Asp Lys Ile	
2430	2435	2440		
cgt gag	gtg act cag aga ctc	aat ggt gaa att cag	gct ctg gaa	7452
Arg Glu	Val Thr Gln Arg Leu	Asn Gly Glu Ile Gln	Ala Leu Glu	
2445	2450	2455		
cta cca	caa aaa gct gaa gca	tta aaa ctg ttt tta	gag gaa acc	7497
Leu Pro	Gln Lys Ala Glu Ala	Leu Lys Leu Phe Leu	Glu Glu Thr	
2460	2465	2470		

aag gcc	aca gtt	gca gtg	tat	ctg gaa	agc cta	cag	gac acc	aaa	7542
Lys Ala	Thr Val	Ala Val	Tyr	Leu Glu	Ser Leu	Gln	Asp Thr	Lys	
2475			2480			2485			
ata acc	tta atc	atc aat	tgg	tta cag	gag gct	tta	agt tca	gca	7587
Ile Thr	Leu Ile	Ile Asn	Trp	Leu Gln	Glu Ala	Leu	Ser Ser	Ala	
2490			2495			2500			
tct ttg	gct cac	atg aag	gcc	aaa ttc	cga gag	act	cta gaa	gat	7632
Ser Leu	Ala His	Met Lys	Ala	Lys Phe	Arg Glu	Thr	Leu Glu	Asp	
2505			2510			2515			
aca cga	gac cga	atg tat	caa	atg gac	att cag	cag	gaa ctt	caa	7677
Thr Arg	Asp Arg	Met Tyr	Gln	Met Asp	Ile Gln	Gln	Glu Leu	Gln	
2520			2525			2530			
cga tac	ctg tct	ctg gta	ggc	cag gtt	tat agc	aca	ctt gtc	acc	7722
Arg Tyr	Leu Ser	Leu Val	Gly	Gln Val	Tyr Ser	Thr	Leu Val	Thr	
2535			2540			2545			
tac att	tct gat	tgg tgg	act	ctt gct	gct aag	aac	ctt act	gac	7767
Tyr Ile	Ser Asp	Trp Trp	Thr	Leu Ala	Ala Lys	Asn	Leu Thr	Asp	
2550			2555			2560			
ttt gca	gag caa	tat tct	atc	caa gat	tgg gct	aaa	cgt atg	aaa	7812
Phe Ala	Glu Gln	Tyr Ser	Ile	Gln Asp	Trp Ala	Lys	Arg Met	Lys	
2565			2570			2575			
gca ttg	gta gag	caa ggg	ttc	act gtt	cct gaa	atc	aag acc	atc	7857
Ala Leu	Val Glu	Gln Gly	Phe	Thr Val	Pro Glu	Ile	Lys Thr	Ile	
2580			2585			2590			
ctt ggg	acc atg	cct gcc	ttt	gaa gtc	agt ctt	cag	gct ctt	cag	7902
Leu Gly	Thr Met	Pro Ala	Phe	Glu Val	Ser Leu	Gln	Ala Leu	Gln	
2595			2600			2605			
aaa gct	acc ttc	cag aca	cct	gat ttt	ata gtc	ccc	cta aca	gat	7947
Lys Ala	Thr Phe	Gln Thr	Pro	Asp Phe	Ile Val	Pro	Leu Thr	Asp	
2610			2615			2620			
ttg agg	att cca	tca gtt	cag	ata aac	ttc aaa	gac	tta aaa	aat	7992
Leu Arg	Ile Pro	Ser Val	Gln	Ile Asn	Phe Lys	Asp	Leu Lys	Asn	
2625			2630			2635			
ata aaa	atc cca	tcc agg	ttt	tcc aca	cca gaa	ttt	acc atc	ctt	8037
Ile Lys	Ile Pro	Ser Arg	Phe	Ser Thr	Pro Glu	Phe	Thr Ile	Leu	
2640			2645			2650			
aac acc	ttc cac	att cct	tcc	ttt aca	att gac	ttt	gta gaa	atg	8082
Asn Thr	Phe His	Ile Pro	Ser	Phe Thr	Ile Asp	Phe	Val Glu	Met	
2655			2660			2665			
aaa gta	aag atc	atc aga	acc	att gac	cag atg	ctg	aac agt	gag	8127
Lys Val	Lys Ile	Ile Arg	Thr	Ile Asp	Gln Met	Leu	Asn Ser	Glu	
2670			2675			2680			

ctg cag	tg	ccc	gtt	cca	gat	ata	tat	ctc	agg	gat	ctg	aag	gtg	8172
Leu Gln	Trp	Pro	Val	Pro	Asp	Ile	Tyr	Leu	Arg	Asp	Leu	Lys	Val	
2685					2690					2695				
gag gac	att	cct	cta	gcg	aga	atc	acc	ctg	cca	gac	ttc	cgt	tta	8217
Glu Asp	Ile	Pro	Leu	Ala	Arg	Ile	Thr	Leu	Pro	Asp	Phe	Arg	Leu	
2700					2705					2710				
cca gaa	atc	gca	att	cca	gaa	ttc	ata	atc	cca	act	ctc	aac	ctt	8262
Pro Glu	Ile	Ala	Ile	Pro	Glu	Phe	Ile	Ile	Pro	Thr	Leu	Asn	Leu	
2715					2720					2725				
aat gat	ttt	caa	gtt	cct	gac	ctt	cac	ata	cca	gaa	ttc	cag	ctt	8307
Asn Asp	Phe	Gln	Val	Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	
2730					2735					2740				
ccc cac	atc	tca	cac	aca	att	gaa	gta	cct	act	ttt	ggc	aag	cta	8352
Pro His	Ile	Ser	His	Thr	Ile	Glu	Val	Pro	Thr	Phe	Gly	Lys	Leu	
2745					2750					2755				
tac agt	att	ctg	aaa	atc	caa	tct	cct	ctt	ttc	aca	tta	gat	gca	8397
Tyr Ser	Ile	Leu	Lys	Ile	Gln	Ser	Pro	Leu	Phe	Thr	Leu	Asp	Ala	
2760					2765					2770				
aat gct	gac	ata	ggg	aat	gga	acc	acc	tca	gca	aac	gaa	gca	ggt	8442
Asn Ala	Asp	Ile	Gly	Asn	Gly	Thr	Thr	Ser	Ala	Asn	Glu	Ala	Gly	
2775					2780					2785				
atc gca	gct	tcc	atc	act	gcc	aaa	gga	gag	tcc	aaa	tta	gaa	gtt	8487
Ile Ala	Ala	Ser	Ile	Thr	Ala	Lys	Gly	Glu	Ser	Lys	Leu	Glu	Val	
2790					2795					2800				
ctc aat	ttt	gat	ttt	caa	gca	aat	gca	caa	ctc	tca	aac	cct	aag	8532
Leu Asn	Phe	Asp	Phe	Gln	Ala	Asn	Ala	Gln	Leu	Ser	Asn	Pro	Lys	
2805					2810					2815				
att aat	ccg	ctg	gct	ctg	aag	gag	tca	gtg	aag	ttc	tcc	agc	aag	8577
Ile Asn	Pro	Leu	Ala	Leu	Lys	Glu	Ser	Val	Lys	Phe	Ser	Ser	Lys	
2820					2825					2830				
tac ctg	aga	acg	gag	cat	ggg	agt	gaa	atg	ctg	ttt	ttt	gga	aat	8622
Tyr Leu	Arg	Thr	Glu	His	Gly	Ser	Glu	Met	Leu	Phe	Phe	Gly	Asn	
2835					2840					2845				
gct att	gag	gga	aaa	tca	aac	aca	gtg	gca	agt	tta	cac	aca	gaa	8667
Ala Ile	Glu	Gly	Lys	Ser	Asn	Thr	Val	Ala	Ser	Leu	His	Thr	Glu	
2850					2855					2860				
aaa aat	aca	ctg	gag	ctt	agt	aat	gga	gtg	att	gtc	aag	ata	aac	8712
Lys Asn	Thr	Leu	Glu	Leu	Ser	Asn	Gly	Val	Ile	Val	Lys	Ile	Asn	
2865					2870					2875				
aat cag	ctt	acc	ctg	gat	agc	aac	act	aaa	tac	ttc	cac	aaa	ttg	8757
Asn Gln	Leu	Thr	Leu	Asp	Ser	Asn	Thr	Lys	Tyr	Phe	His	Lys	Leu	
2880					2885					2890				

aac atc	ccc aaa	ctg gac	ttc	tct agt	cag gct	gac	ctg cgc	aac	8802
Asn Ile	Pro Lys	Leu Asp	Phe	Ser Ser	Gln Ala	Asp	Leu Arg	Asn	
2895			2900			2905			
gag atc	aag aca	ctg ttg	aaa	gct ggc	cac ata	gca	tgg act	tct	8847
Glu Ile	Lys Thr	Leu Leu	Lys	Ala Gly	His Ile	Ala	Trp Thr	Ser	
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Ser Gly	Lys Gly	Ser Trp	Lys	Trp Ala	Cys Pro	Arg	Phe Ser	Asp	
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Glu Gly	Thr His	Glu Ser	Gln	Ile Ser	Phe Thr	Ile	Glu Gly	Pro	
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Leu Thr	Ser Phe	Gly Leu	Ser	Asn Lys	Ile Asn	Ser	Lys His	Leu	
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Arg Val	Asn Gln	Asn Leu	Val	Tyr Glu	Ser Gly	Ser	Leu Asn	Phe	
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Ser Lys	Leu Glu	Ile Gln	Ser	Gln Val	Asp Ser	Gln	His Val	Gly	
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His Ser	Val Leu	Thr Ala	Lys	Gly Met	Ala Leu	Phe	Gly Glu	Gly	
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Lys Ala	Glu Phe	Thr Gly	Arg	His Asp	Ala His	Leu	Asn Gly	Lys	
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Val Ile	Gly Thr	Leu Lys	Asn	Ser Leu	Phe Phe	Ser	Ala Gln	Pro	
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Phe Glu	Ile Thr	Ala Ser	Thr	Asn Asn	Glu Gly	Asn	Leu Lys	Val	
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Arg Phe	Pro Leu	Arg Leu	Thr	Gly Lys	Ile Asp	Phe	Leu Asn	Asn	
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Tyr Ala	Leu Phe	Leu Ser	Pro	Ser Ala	Gln Gln	Ala	Ser Trp	Gln	
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Val Ser	Ala Arg	Phe Asn	Gln	Tyr Lys	Tyr Asn	Gln	Asn Phe	Ser	
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His Asp Glu Leu Pro Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val	
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Leu Val Gln Val His Ala Ser	Gln Pro Ser Ser Phe His Asp Phe	
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Pro Asp Leu Gly Gln Glu Val	Ala Leu Asn Ala Asn Thr Lys Asn	
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Gln Lys Ile Arg Trp Lys Asn	Glu Val Arg Ile His Ser Gly Ser	
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Phe Gln Ser Gln Val Glu Leu	Ser Asn Asp Gln Glu Lys Ala His	
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Asp Ser	Thr Cys	Ser Ser	Thr	Val Gln	Phe Leu	Glu	Tyr Glu	Leu	
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Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val  
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Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln  
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Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu  
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Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg  
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Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly  
 465 470 475 480

Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly  
 485 490 495

Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys  
 500 505 510

Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile  
 515 520 525

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu  
 530 535 540

Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala  
 545 550 555 560

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys  
 565 570 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe  
 580 585 590





Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met  
820 825 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile  
835 840 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu  
850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser  
865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg  
885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu  
900 905 910

Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys Phe Ile Ile Pro Ser  
915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu  
930 935 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg  
945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys  
965 970 975

Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr  
980 985 990

Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr  
995 1000 1005

Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln  
1010 1015 1020

Arg Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln  
1025 1030 1035

[illegible]

Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr Met Thr Phe Lys Tyr  
1040 1045 1050

Asn Arg Gln Ser Met Thr Leu Ser Ser Glu Val Gln Ile Pro Asp  
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Phe Asp Val Asp Leu Gly Thr Ile Leu Arg Val Asn Asp Glu Ser  
1070 1075 1080

Thr Glu Gly Lys Thr Ser Tyr Arg Leu Thr Leu Asp Ile Gln Asn  
1085 1090 1095

Lys Lys Ile Thr Glu Val Ala Leu Met Gly His Leu Ser Cys Asp  
1100 . 1105 1110

Thr Lys Glu Glu Arg Lys Ile Lys Gly Val Ile Ser Ile Pro Arg  
1115 1120 1125

Leu Gln Ala Glu Ala Arg Ser Glu Ile Leu Ala His Trp Ser Pro  
1130 1135 1140

Ala Lys    Leu Leu Leu Gln Met    Asp Ser Ser Ala Thr    Ala Tyr Gly  
            1145                          1150                          1155

Ser Thr Val Ser Lys Arg Val Ala Trp His Tyr Asp Glu Glu Lys  
1160 1165 1170

Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val Asp Thr Lys Lys  
1175 1180 1185

Met Thr Ser Asn Phe Pro Val Asp Leu Ser Asp Tyr Pro Lys Ser  
1190 1195 1200

Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val Pro Gln  
1205 1210 1215

Thr Asp Met Thr Phe Arg His Val Gly Ser Lys Leu Ile Val Ala  
1220 1225 1230

Met Ser Ser Trp Leu Gln Lys Ala Ser Gly Ser Leu Pro Tyr Thr  
1235 1240 1245

[illegible]

Gln Thr Leu Gln Asp His Leu Asn Ser Leu Lys Glu Phe Asn Leu  
1250 1255 1260

Gln Asn Met Gly Leu Pro Asp Phe His Ile Pro Glu Asn Leu Phe  
1265 1270 1275

Leu Lys Ser Asp Gly Arg Val Lys Tyr Thr Leu Asn Lys Asn Ser  
1280 1285 1290

Leu Lys Ile Glu Ile Pro Leu Pro Phe Gly Gly Lys Ser Ser Arg  
1295 1300 1305

Asp Leu Lys Met Leu Glu Thr Val Arg Thr Pro Ala Leu His Phe  
1310 1315 1320

Lys Ser Val Gly Phe His Leu Pro Ser Arg Glu Phe Gln Val Pro  
1325 1330 1335

Thr Phe Thr Ile Pro Lys Leu Tyr Gln Leu Gln Val Pro Leu Leu  
1340 1345 1350

Gly Val Leu Asp Leu Ser Thr Asn Val Tyr Ser Asn Leu Tyr Asn  
1355 1360 1365

Trp Ser Ala Ser Tyr Ser Gly Gly Asn Thr Ser Thr Asp His Phe  
1370 1375 1380

Ser Leu Arg Ala Arg Tyr His Met Lys Ala Asp Ser Val Val Asp  
1385 1390 1395

Leu Leu Ser Tyr Asn Val Gln Gly Ser Gly Glu Thr Thr Tyr Asp  
1400 1405 1410

His Lys Asn Thr Phe Thr Leu Ser Cys Asp Gly Ser Leu Arg His  
1415 1420 1425

Lys Phe Leu Asp Ser Asn Ile Lys Phe Ser His Val Glu Lys Leu  
1430 1435 1440

Gly Asn Asn Pro Val Ser Lys Gly Leu Leu Ile Phe Asp Ala Ser  
1445 1450 1455

Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser	Val	His	Leu	Asp	Ser
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Lys	Lys	Lys	Gln	His	Leu	Phe	Val	Lys	Glu	Val	Lys	Ile	Asp	Gly
1475						1480					1485			
Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys	Gly	Thr	Tyr	Gly	Leu
1490						1495					1500			
Ser	Cys	Gln	Arg	Asp	Pro	Asn	Thr	Gly	Arg	Leu	Asn	Gly	Glu	Ser
1505						1510					1515			
Asn	Leu	Arg	Phe	Asn	Ser	Ser	Tyr	Leu	Gln	Gly	Thr	Asn	Gln	Ile
1520						1525					1530			
Thr	Gly	Arg	Tyr	Glu	Asp	Gly	Thr	Leu	Ser	Leu	Thr	Ser	Thr	Ser
1535						1540					1545			
Asp	Leu	Gln	Ser	Gly	Ile	Ile	Lys	Asn	Thr	Ala	Ser	Leu	Lys	Tyr
1550						1555					1560			
Glu	Asn	Tyr	Glu	Leu	Thr	Leu	Lys	Ser	Asp	Thr	Asn	Gly	Lys	Tyr
1565						1570					1575			
Lys	Asn	Phe	Ala	Thr	Ser	Asn	Lys	Met	Asp	Met	Thr	Phe	Ser	Lys
1580						1585					1590			
Gln	Asn	Ala	Leu	Leu	Arg	Ser	Glu	Tyr	Gln	Ala	Asp	Tyr	Glu	Ser
1595						1600					1605			
Leu	Arg	Phe	Phe	Ser	Leu	Leu	Ser	Gly	Ser	Leu	Asn	Ser	His	Gly
1610						1615					1620			
Leu	Glu	Leu	Asn	Ala	Asp	Ile	Leu	Gly	Thr	Asp	Lys	Ile	Asn	Ser
1625						1630					1635			
Gly	Ala	His	Lys	Ala	Thr	Leu	Arg	Ile	Gly	Gln	Asp	Gly	Ile	Ser
1640						1645					1650			
Thr	Ser	Ala	Thr	Thr	Asn	Leu	Lys	Cys	Ser	Leu	Leu	Val	Leu	Glu
1655						1660					1665			

Asn	Glu	Leu	Asn	Ala	Glu	Leu	Gly	Leu	Ser	Gly	Ala	Ser	Met	Lys
1670						1675					1680			
Leu	Thr	Thr	Asn	Gly	Arg	Phe	Arg	Glu	His	Asn	Ala	Lys	Phe	Ser
1685						1690					1695			
Leu	Asp	Gly	Lys	Ala	Ala	Leu	Thr	Glu	Leu	Ser	Leu	Gly	Ser	Ala
1700						1705					1710			
Tyr	Gln	Ala	Met	Ile	Leu	Gly	Val	Asp	Ser	Lys	Asn	Ile	Phe	Asn
1715						1720					1725			
Phe	Lys	Val	Ser	Gln	Glu	Gly	Leu	Lys	Leu	Ser	Asn	Asp	Met	Met
1730						1735					1740			
Gly	Ser	Tyr	Ala	Glu	Met	Lys	Phe	Asp	His	Thr	Asn	Ser	Leu	Asn
1745						1750					1755			
Ile	Ala	Gly	Leu	Ser	Leu	Asp	Phe	Ser	Ser	Lys	Leu	Asp	Asn	Ile
1760						1765					1770			
Tyr	Ser	Ser	Asp	Lys	Phe	Tyr	Lys	Gln	Thr	Val	Asn	Leu	Gln	Leu
1775						1780					1785			
Gln	Pro	Tyr	Ser	Leu	Val	Thr	Thr	Leu	Asn	Ser	Asp	Leu	Lys	Tyr
1790						1795					1800			
Asn	Ala	Leu	Asp	Leu	Thr	Asn	Asn	Gly	Lys	Leu	Arg	Leu	Glu	Pro
1805						1810					1815			
Leu	Lys	Leu	His	Val	Ala	Gly	Asn	Leu	Lys	Gly	Ala	Tyr	Gln	Asn
1820						1825					1830			
Asn	Glu	Ile	Lys	His	Ile	Tyr	Ala	Ile	Ser	Ser	Ala	Ala	Leu	Ser
1835						1840					1845			
Ala	Ser	Tyr	Lys	Ala	Asp	Thr	Val	Ala	Lys	Val	Gln	Gly	Val	Glu
1850						1855					1860			
Phe	Ser	His	Arg	Leu	Asn	Thr	Asp	Ile	Ala	Gly	Leu	Ala	Ser	Ala
1865						1870					1875			

$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$

Ile Val Val Leu Glu Asn Val Gln Arg Asn Leu Lys His Ile Asn  
2090 2095 2100

Ile Asp Gln Phe Val Arg Lys Tyr Arg Ala Ala Leu Gly Lys Leu  
2105 2110 2115

Pro Gln Gln Ala Asn Asp Tyr Leu Asn Ser Phe Asn Trp Glu Arg  
2120 2125 2130

Gln Val Ser His Ala Lys Glu Lys Leu Thr Ala Leu Thr Lys Lys  
2135 2140 2145

Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile Ala Leu Asp Asp Ala  
2150 2155 2160

Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu Gln Thr Tyr Met  
2165 2170 2175

Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp Leu His Asp  
2180 2185 2190

Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile Glu Lys  
2195 2200 2205

Leu Lys Ser Leu Asp Glu His Tyr His Ile Arg Val Asn Leu Val  
2210 2215 2220

Lys Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe  
2225 2230 2235

Asn Lys Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp  
2240 2245 2250

Thr Lys Tyr Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln  
2255 2260 2265

Leu Lys Arg His Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly  
2270 2275 2280

Lys Leu Lys Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu  
2285 2290 2295

Asp	Gln	Leu	Gly	Thr	Thr	Ile	Ser	Phe	Glu	Arg	Ile	Asn	Asp	Val
2300						2305								2310
Leu	Glu	His	Val	Lys	His	Phe	Val	Ile	Asn	Leu	Ile	Gly	Asp	Phe
2315						2320					2325			
Glu	Val	Ala	Glu	Lys	Ile	Asn	Ala	Phe	Arg	Ala	Lys	Val	His	Glu
2330						2335					2340			
Leu	Ile	Glu	Arg	Tyr	Glu	Val	Asp	Gln	Gln	Ile	Gln	Val	Leu	Met
2345						2350					2355			
Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	Lys	Leu	Lys	Glu	Thr
2360						2365					2370			
Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	Val	Lys	Ile	Lys	Asp
2375						2380					2385			
Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	Asp	Ala	Val	Lys	Lys
2390						2395					2400			
Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	Glu	Asp	Val	Asn	Lys
2405						2410					2415			
Phe	Leu	Asp	Met	Leu	Ile	Lys	Lys	Leu	Lys	Ser	Phe	Asp	Tyr	His
2420						2425					2430			
Gln	Phe	Val	Asp	Glu	Thr	Asn	Asp	Lys	Ile	Arg	Glu	Val	Thr	Gln
2435						2440					2445			
Arg	Leu	Asn	Gly	Glu	Ile	Gln	Ala	Leu	Glu	Leu	Pro	Gln	Lys	Ala
2450						2455					2460			
Glu	Ala	Leu	Lys	Leu	Phe	Leu	Glu	Glu	Thr	Lys	Ala	Thr	Val	Ala
2465						2470					2475			
Val	Tyr	Leu	Glu	Ser	Leu	Gln	Asp	Thr	Lys	Ile	Thr	Leu	Ile	Ile
2480						2485					2490			
Asn	Trp	Leu	Gln	Glu	Ala	Leu	Ser	Ser	Ala	Ser	Leu	Ala	His	Met
2495						2500					2505			



Lys Ala	Lys Phe Arg Glu Thr	Leu Glu Asp Thr Arg	Asp Arg Met
2510	2515	2520	
Tyr Gln	Met Asp Ile Gln Gln	Glu Leu Gln Arg Tyr	Leu Ser Leu
2525	2530	2535	
Val Gly	Gln Val Tyr Ser Thr	Leu Val Thr Tyr Ile	Ser Asp Trp
2540	2545	2550	
Trp Thr	Leu Ala Ala Lys Asn	Leu Thr Asp Phe Ala	Glu Gln Tyr
2555	2560	2565	
Ser Ile	Gln Asp Trp Ala Lys	Arg Met Lys Ala Leu	Val Glu Gln
2570	2575	2580	
Gly Phe	Thr Val Pro Glu Ile	Lys Thr Ile Leu Gly	Thr Met Pro
2585	2590	2595	
Ala Phe	Glu Val Ser Leu Gln	Ala Leu Gln Lys Ala	Thr Phe Gln
2600	2605	2610	
Thr Pro	Asp Phe Ile Val Pro	Leu Thr Asp Leu Arg	Ile Pro Ser
2615	2620	2625	
Val Gln	Ile Asn Phe Lys Asp	Leu Lys Asn Ile Lys	Ile Pro Ser
2630	2635	2640	
Arg Phe	Ser Thr Pro Glu Phe	Thr Ile Leu Asn Thr	Phe His Ile
2645	2650	2655	
Pro Ser	Phe Thr Ile Asp Phe	Val Glu Met Lys Val	Lys Ile Ile
2660	2665	2670	
Arg Thr	Ile Asp Gln Met Leu	Asn Ser Glu Leu Gln	Trp Pro Val
2675	2680	2685	
Pro Asp	Ile Tyr Leu Arg Asp	Leu Lys Val Glu Asp	Ile Pro Leu
2690	2695	2700	
Ala Arg	Ile Thr Leu Pro Asp	Phe Arg Leu Pro Glu	Ile Ala Ile
2705	2710	2715	

SECRET

Pro Glu Phe Ile Ile Pro Thr Leu Asn Leu Asn Asp Phe Gln Val  
2720 2725 2730

Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	Pro	His	Ile	Ser	His
2735						2740					2745			

Thr Ile Glu Val Pro Thr Phe Gly Lys Leu Tyr Ser Ile Leu Lys  
2750 2755 2760

Ile Gln Ser Pro Leu Phe Thr Leu Asp Ala Asn Ala Asp Ile Gly  
2765 2770 2775

Asn Gly Thr Thr Ser Ala Asn Glu Ala Gly Ile Ala Ala Ser Ile  
2780 2785 2790

Thr Ala Lys Gly Glu Ser Lys Leu Glu Val Leu Asn Phe Asp Phe  
2795 2800 2805

Gln Ala Asn Ala Gln Leu Ser Asn Pro Lys Ile Asn Pro Leu Ala  
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Leu Lys Glu Ser Val Lys Phe Ser Ser Lys Tyr Leu Arg Thr Glu  
2825 2830 2835

His Gly Ser Glu Met Leu Phe Phe Gly Asn Ala Ile Glu Gly Lys  
2840 2845 2850

Ser Asn Thr Val Ala Ser Leu His Thr Glu Lys Asn Thr Leu Glu  
2855 2860 2865

Leu Ser Asn Gly Val Ile Val Lys Ile Asn Asn Gln Leu Thr Leu  
2870 2875 2880

Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn Ile Pro Lys Leu  
2885 2890 2895

Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile Lys Thr Leu  
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Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys Gly Ser  
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Trp Lys Trp Ala Cys Pro Arg Phe Ser Asp Glu Gly Thr His Glu  
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 Ser Gln Ile Ser Phe Thr Ile Glu Gly Pro Leu Thr Ser Phe Gly  
 2945 2950 2955  
  
 Leu Ser Asn Lys Ile Asn Ser Lys His Leu Arg Val Asn Gln Asn  
 2960 2965 2970  
  
 Leu Val Tyr Glu Ser Gly Ser Leu Asn Phe Ser Lys Leu Glu Ile  
 2975 2980 2985  
  
 Gln Ser Gln Val Asp Ser Gln His Val Gly His Ser Val Leu Thr  
 2990 2995 3000  
  
 Ala Lys Gly Met Ala Leu Phe Gly Glu Gly Lys Ala Glu Phe Thr  
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 Gly Arg His Asp Ala His Leu Asn Gly Lys Val Ile Gly Thr Leu  
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 Lys Asn Ser Leu Phe Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala  
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 Ser Thr Asn Asn Glu Gly Asn Leu Lys Val Arg Phe Pro Leu Arg  
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 Leu Thr Gly Lys Ile Asp Phe Leu Asn Asn Tyr Ala Leu Phe Leu  
 3065 3070 3075  
  
 Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln Val Ser Ala Arg Phe  
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 Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala Gly Asn Asn Glu  
 3095 3100 3105  
  
 Asn Ile Met Glu Ala His Val Gly Ile Asn Gly Glu Ala Asn Leu  
 3110 3115 3120  
  
 Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg Leu Pro  
 3125 3130 3135

Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys Ser Ser Val Ile  
3335 3340 3345





Gln Ile Tyr Lys Lys Leu Arg Thr Ser Ser Phe Ala Leu Asn Leu  
 3770 3775 3780

Pro Thr Leu Pro Glu Val Lys Phe Pro Glu Val Asp Val Leu Thr  
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Lys Tyr Ser Gln Pro Glu Asp Ser Leu Ile Pro Phe Phe Glu Ile  
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Thr Val Pro Glu Ser Gln Leu Thr Val Ser Gln Phe Thr Leu Pro  
 3815 3820 3825

Lys Ser Val Ser Asp Gly Ile Ala Ala Leu Asp Leu Asn Ala Val  
 3830 3835 3840

Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr Ile Ile Val Pro  
 3845 3850 3855

Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser Val Pro Ala  
 3860 3865 3870

Gly Ile Ala Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg Phe Glu  
 3875 3880 3885

Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys  
 3890 3895 3900

Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser  
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Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr  
 3920 3925 3930

His Lys Ile Glu Asp Gly Thr Leu Ala Ser Lys Thr Lys Gly Thr  
 3935 3940 3945

Phe Ala His Arg Asp Phe Ser Ala Glu Tyr Glu Glu Asp Gly Lys  
 3950 3955 3960

Tyr Glu Gly Leu Gln Glu Trp Glu Gly Lys Ala His Leu Asn Ile  
 3965 3970 3975

*[Faint header information]*

Lys Ser Pro Ala Phe Thr Asp Leu His Leu Arg Tyr Gln Lys Asp  
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Lys Lys Gly Ile Ser Thr Ser Ala Ala Ser Pro Ala Val Gly Thr  
3995 4000 4005

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Val Gly Met Asp Met Asp Glu Asp Asp Asp Phe Ser Lys Trp Asn  
    4010                      4015                      4020
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Phe Tyr Tyr Ser Pro Gln Ser Ser Pro Asp Lys Lys Leu Thr Ile  
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Phe Lys Thr Glu Leu Arg Val Arg Glu Ser Asp Glu Glu Thr Gln  
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Ile Lys Val Asn Trp Glu Glu Glu Ala Ala Ser Gly Leu Leu Thr  
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Ser Leu Lys Asp Asn Val Pro Lys Ala Thr Gly Val Leu Tyr Asp  
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Tyr Val Asn Lys Tyr His Trp Glu His Thr Gly Leu Thr Leu Arg  
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Glu Val Ser Ser Lys Leu Arg Arg Asn Leu Gln Asp His Ala Glu  
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Trp Val Tyr Gln Gly Ala Ile Arg Glu Ile Asp Asp Ile Asp Glu  
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Arg Phe Gln Lys Gly Ala Ser Gly Thr Thr Gly Thr Tyr Gln Glu  
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Trp Lys Asp Lys Ala Gln Asn Leu Tyr Gln Glu Leu Leu Thr Gln  
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Glu Gly Gln Ala Ser Phe Gln Gly Leu Lys Asp Asn Val Phe Asp  
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Gly Leu Val Arg Val Thr Gln Glu Phe His Met Lys Val Lys His  
4175 4180 4185



Leu Ile Asp Ser Leu Ile Asp Phe Leu Asn Phe Pro Arg Phe Gln  
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 Phe Pro Gly Lys Pro Gly Ile Tyr Thr Arg Glu Glu Leu Cys Thr  
 4205 4210 4215  
 Met Phe Ile Arg Glu Val Gly Thr Val Leu Ser Gln Val Tyr Ser  
 4220 4225 4230  
 Lys Val His Asn Gly Ser Glu Ile Leu Phe Ser Tyr Phe Gln Asp  
 4235 4240 4245  
 Leu Val Ile Thr Leu Pro Phe Glu Leu Arg Lys His Lys Leu Ile  
 4250 4255 4260  
 Asp Val Ile Ser Met Tyr Arg Glu Leu Leu Lys Asp Leu Ser Lys  
 4265 4270 4275  
 Glu Ala Gln Glu Val Phe Lys Ala Ile Gln Ser Leu Lys Thr Thr  
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 Glu Val Leu Arg Asn Leu Gln Asp Leu Leu Gln Phe Ile Phe Gln  
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 Leu Ile Glu Asp Asn Ile Lys Gln Leu Lys Glu Met Lys Phe Thr  
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 Tyr Leu Ile Asn Tyr Ile Gln Asp Glu Ile Asn Thr Ile Phe Asn  
 4325 4330 4335  
 Asp Tyr Ile Pro Tyr Val Phe Lys Leu Leu Lys Glu Asn Leu Cys  
 4340 4345 4350  
 Leu Asn Leu His Lys Phe Asn Glu Phe Ile Gln Asn Glu Leu Gln  
 4355 4360 4365  
 Glu Ala Ser Gln Glu Leu Gln Gln Ile His Gln Tyr Ile Met Ala  
 4370 4375 4380  
 Leu Arg Glu Glu Tyr Phe Asp Pro Ser Ile Val Gly Trp Thr Val  
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Lys Tyr Tyr Glu Leu Glu Glu Lys Ile Val Ser Leu Ile Lys Asn  
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Leu Leu Val Ala Leu Lys Asp Phe His Ser Glu Tyr Ile Val Ser  
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Ala Ser Asn Phe Thr Ser Gln Leu Ser Ser Gln Val Glu Gln Phe  
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Leu His Arg Asn Ile Gln Glu Tyr Leu Ser Ile Leu Thr Asp Pro  
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Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu Leu Ser Ala Thr Ala  
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Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala Thr Lys Lys Ile Ile  
4475 4480 4485

Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys Leu Gln Asp Phe Ser  
4490 4495 4500

Asp Gln Leu Ser Asp Tyr Tyr Glu Lys Phe Ile Ala Glu Ser Lys  
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Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr His Thr Phe Leu Ile  
4520 4525 4530

Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln Ser Thr Thr Val Met  
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Asn Pro Tyr Met Lys Leu Ala Pro Gly Glu Leu Thr Ile Ile Leu  
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Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly  
225 230 235 240

agc cgg acc cgc gac cgc ctg gac gag gtg aag gag cag gtg gcg gag 828  
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu  
245 250 255

gtg cgc gcc aag ctg gag gag cag gcc cag cag ata cgc ctg cag gcc 876  
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala  
260 265 270

gag gcc ttc cag gcc cgc ctc aag agc tgg ttc gag ccc ctg gtg gaa 924  
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu  
275 280 285

gac atg cag cgc cag tgg gcc ggc ctg gtg gag aag gtg cag gct gcc 972  
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290 295 300

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Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His  
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Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu  
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35 40 45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln  
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Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser  
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Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu  
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Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val  
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Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg  
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Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala  
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245 250 255

His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu  
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Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp  
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Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu  
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Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu  
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Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro  
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Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly  
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Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly  
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Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser  
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Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys  
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Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr  
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Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His	
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Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile	
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Arg Glu Leu Leu Trp Gly Tyr Arg Asp Pro Phe Leu Ser Leu Val Pro  
35 40 45





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Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala	
155 160 165	
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Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp	
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Trp Gly Arg Arg Cys Ser Phe Arg Cys Asn Cys His Gly Ser Pro Cys	
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gcc tct ggc tct gtc ggc cag agc ccc aac tca gcc cca aaa gct ggg	2309
Ala Ser Gly Ser Val Gly Gln Ser Pro Asn Ser Ala Pro Lys Ala Gly	
750 755 760	
ctt cct ggg gcc aca ggg cct atg gca gtc aga cca gag gaa gcg gtc	2357
Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val	
765 770 775	
cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca	2405
Arg Gly Leu Gly Ala Gly Thr Glu Ser Ser Arg Arg Ala Gln Glu Pro	
780 785 790	
gtc tct ggc tgt ggc tcc cca gaa cag gat ccc cag aag cag gct gaa	2453
Val Ser Gly Cys Gly Ser Pro Glu Gln Asp Pro Gln Lys Gln Ala Glu	
795 800 805	
gag gaa agg cag gag gaa cct gag tat gag aat gtt gta ccc atc tcc	2501
Glu Glu Arg Gln Glu Glu Pro Glu Tyr Glu Asn Val Val Pro Ile Ser	
810 815 820 825	

agg cca cca gaa ccc tga tgaccttgaa tttggggagt ggggagagtg 2549  
 Arg Pro Pro Glu Pro  
 830

gatggactag actgtgctgt gtgctggaaa atgatcccgg ggccaggaca gacaaaccag 2609  
 agcctctgcg cctccacagg gaaaaggcaa ggcttcagg ccagttggcc caggccctg 2669  
 gcagtgtccc cggagggggcc caggaaggcc tgggcagaga ccctgttaga tggggtcagg 2729  
 aagggttgcc tgcagggact tttgctctgc tgtcctggac cctgtgtgcc tcataagggc 2789  
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 <212> PRT  
 <213> Homo sapiens

<400> 140

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 20 25 30

Ser Ser Pro Ser Ala Glu Leu Gln Cys Cys Ala Gly Trp Arg Gln Lys  
 35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln  
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly  
65 70 75 80

Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly  
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu  
100 105 110

Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg  
115 120 125

Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala  
130 135 140

Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg  
145 150 155 160

Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr  
165 170 175

Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe  
180 185 190

Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys  
195 200 205

Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu  
210 215 220

Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro  
225 230 235 240

Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser  
245 250 255

His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu  
260 265 270

Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp  
 275 280 285

Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu  
 290 295 300

Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu  
 305 310 315 320

Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro  
 325 330 335

Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly  
 340 345 350

Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly  
 355 360 365

Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser  
 370 375 380

Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys  
 385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser  
 405 410 415

Gly Ser Arg Asp Thr Ala Leu Ile Ala Gly Ser Leu Val Pro Leu Leu  
 420 425 430

Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro  
 435 440 445

Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser  
 450 455 460

Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr  
 465 470 475 480

Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val  
 485 490 495

[illegible]

●



●



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\_\_\_\_\_

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu  
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln  
740 745 750

Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro  
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr  
770 775 780

Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro  
785 790 795 800

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820 825 830

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Asp Asp Lys Met Lys Pro Ala Asn Asp Glu Pro Asp Gln Lys Ser Cys  
5 10 15

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Gly Lys Lys Pro Lys Gly Leu His Leu Leu Ser Ser Pro Trp Trp Phe  
20 25 30 35

cct gct gct atg act ctg gtc atc ctc tgc ctg gtg ttg tca gtg acc 200  
Pro Ala Ala Met Thr Leu Val Ile Leu Cys Leu Val Leu Ser Val Thr  
40 45 50



ctt	att	gta	cag	tgg	aca	caa	tta	cgc	cag	gta	tct	gac	ctc	tta	aaa	248
Leu	Ile	Val	Gln	Trp	Thr	Gln	Leu	Arg	Gln	Val	Ser	Asp	Leu	Leu	Lys	
			55					60					65			
caa	tac	caa	gcg	aac	ctt	act	cag	cag	gat	cgt	atc	ctg	gaa	ggg	cag	296
Gln	Tyr	Gln	Ala	Asn	Leu	Thr	Gln	Gln	Asp	Arg	Ile	Leu	Glu	Gly	Gln	
			70				75					80				
atg	tta	gcc	cag	cag	aag	gca	gaa	aac	gct	tca	cag	gaa	tca	aag	aag	344
Met	Leu	Ala	Gln	Gln	Lys	Ala	Glu	Asn	Ala	Ser	Gln	Glu	Ser	Lys	Lys	
						90					95					
gaa	ctg	aaa	gga	aag	ata	gac	acc	ctc	acc	cag	aag	ctg	aat	gag	aaa	392
Glu	Leu	Lys	Gly	Lys	Ile	Asp	Thr	Leu	Thr	Gln	Lys	Leu	Asn	Glu	Lys	
100					105					110					115	
tcc	aaa	gag	cag	gag	gag	ctt	cta	cag	aag	aat	cag	aac	ctc	caa	gaa	440
Ser	Lys	Glu	Gln	Glu	Glu	Leu	Leu	Gln	Lys	Asn	Gln	Asn	Leu	Gln	Glu	
				120				125						130		
gcc	ctg	caa	aga	gct	gca	aac	tct	tca	gag	gag	tcc	cag	aga	gaa	ctc	488
Ala	Leu	Gln	Arg	Ala	Ala	Asn	Ser	Ser	Glu	Glu	Ser	Gln	Arg	Glu	Leu	
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aag	gga	aag	ata	gac	acc	atc	acc	cgg	aag	ctg	gac	gag	aaa	tcc	aaa	536
Lys	Gly	Lys	Ile	Asp	Thr	Ile	Thr	Arg	Lys	Leu	Asp	Glu	Lys	Ser	Lys	
		150				155						160				
gag	cag	gag	gag	ctt	ctg	cag	atg	att	cag	aac	ctc	caa	gaa	gcc	ctg	584
Glu	Gln	Glu	Glu	Leu	Leu	Gln	Met	Ile	Gln	Asn	Leu	Gln	Glu	Ala	Leu	
			165			170					175					
cag	aga	gct	gca	aac	tct	tca	gag	gag	tcc	cag	aga	gaa	ctc	aag	gga	632
Gln	Arg	Ala	Ala	Asn	Ser	Ser	Glu	Glu	Ser	Gln	Arg	Glu	Leu	Lys	Gly	
180					185					190					195	
aag	ata	gac	acc	ctc	acc	ttg	aag	ctg	aac	gag	aaa	tcc	aaa	gag	cag	680
Lys	Ile	Asp	Thr	Leu	Thr	Leu	Lys	Leu	Asn	Glu	Lys	Ser	Lys	Glu	Gln	
				200				205						210		
gag	gag	ctt	cta	cag	aag	aat	cag	aac	ctc	caa	gaa	gcc	ctg	caa	aga	728
Glu	Glu	Leu	Leu	Gln	Lys	Asn	Gln	Asn	Leu	Gln	Glu	Ala	Leu	Gln	Arg	
			215				220						225			
gct	gca	aac	ttt	tca	ggt	cct	tgt	cca	caa	gac	tgg	ctc	tgg	cat	aaa	776
Ala	Ala	Asn	Phe	Ser	Gly	Pro	Cys	Pro	Gln	Asp	Trp	Leu	Trp	His	Lys	
			230				235						240			
gaa	aac	tgt	tac	ctc	ttc	cat	ggg	ccc	ttt	agc	tgg	gaa	aaa	aac	cgg	824
Glu	Asn	Cys	Tyr	Leu	Phe	His	Gly	Pro	Phe	Ser	Trp	Glu	Lys	Asn	Arg	
			245			250					255					
cag	acc															

gat gat ttg aca ttc atc tta caa gca att tcc cat acc acc tcc ccg 920  
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 Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro Trp Leu Trp  
 295 300 305

gag aat gga act cct ttg aat ttt caa ttc ttt aag acc agg ggc gtt 1016  
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 310 315 320

tct tta cag cta tat tca tca ggc aac tgt gca tac ctt caa gac gga 1064  
 Ser Leu Gln Leu Tyr Ser Ser Gly Asn Cys Ala Tyr Leu Gln Asp Gly  
 325 330 335

gct gtg ttc gct gaa aac tgc att cta att gca ttc agc ata tgt cag 1112  
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 340 345 350 355

aag aag aca aat cat ttg caa att tag tgaatctaaa gattctggag 1159  
 Lys Lys Thr Asn His Leu Gln Ile  
 360

aagaccatga gaagactttt gactgtcgct ctgaaattta agctattttt tattacctgc 1219

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 cataaaaaaa aaaaaaaaaa aaaa 3763

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Leu Lys Gly Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser  
195 200 205

Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala  
210 215 220

Leu Gln Arg Ala Ala Asn Phe Ser Gly Pro Cys Pro Gln Asp Trp Leu  
225 230 235 240

Trp His Lys Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu  
245 250 255

Lys Asn Arg Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile  
260 265 270

Asn Gly Ala Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr  
275 280 285

Thr Ser Pro Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro  
290 295 300

Trp Leu Trp Glu Asn Gly Thr Pro Leu Asn Phe Gln Phe Phe Lys Thr  
305 310 315 320

Arg Gly Val Ser Leu Gln Leu Tyr Ser Ser Gly Asn Cys Ala Tyr Leu  
325 330 335

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340 345 350

Ile Cys Gln Lys Lys Thr Asn His Leu Gln Ile  
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<220>  
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397

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200 205 210

att gtc atc ctg tcc tgc tat tgc att atc atc tcc aag ctg tca cac 727  
Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser Lys Leu Ser His  
215 220 225

tcc aag ggc cac cag aag cgc aag gcc ctc aag acc aca atc atc ccc 775  
Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr Thr Ile Ile Pro  
230 235 240

atc ctg gct ttc ttc gcc tgt tgg ctg cct tac tac att ggg atc agc 823  
Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr Ile Gly Ile Ser  
245 250 255 260

atc gac tcc ttc atc ctc ctg gaa atc atc aag caa ggg tgt gag ttt 871  
Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln Gly Cys Glu Phe  
265 270 275

gag aac act gtg cac aag tgg att tcc atc acc gag gcc cta gct ttc 919  
Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu Ala Leu Ala Phe  
280 285 290

ttc	cac	tgt	tgt	ctg	aac	ccc	atc	ctc	tat	gct	ttc	ctt	gga	gcc	aaa	967
Phe	His	Cys	Cys	Leu	Asn	Pro	Ile	Leu	Tyr	Ala	Phe	Leu	Gly	Ala	Lys	
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Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val Ser Arg Gly Ser  
310 315 320

agc ctc aag atc ctc tcc aaa gga aag cga ggt gga cat tca tct gtt 1063  
 Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly His Ser Ser Val  
 325 330 335 340

tcc act gag tct gag tct tca agt ttt cac tcc agc taa 1102  
Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser  
345 350

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<212> PRT
<213> Homo sapiens
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<400> 144

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20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile  
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly  
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu  
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val  
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val  
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala  
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser  
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val  
145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn  
165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn  
180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu  
195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser  
210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr  
225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr  
245 250 255



Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln  
260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu  
275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe  
290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val  
305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly  
325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser  
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<220>  
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31

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<212> DNA  
<213> Unknown

<220>  
<223> Primer

<400> 146  
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<400> 148

Ser Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Asn  
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<210> 149  
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<213> Homo sapiens

<400> 149

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Ala Ala Arg Ala His Tyr Asn Ile Val Thr Phe Ala Ala Ala Ile Tyr  
20 25 30

Lys Lys Ser Gln His Met Ala Ala Ala Val Asn Ile Arg Asn Cys Cys  
35 40 45

Tyr Ile Ala Ala Ala Ser Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu  
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Asn Asn  
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<212> DNA  
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39

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<220>  
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<210> 154  
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<220>  
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Leu Pro Xaa Thr Gly Xaa

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Ile Val Tyr Glu Leu Leu

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